Supplementary Information

Simulation of the evolution of biomass burning organic aerosol with different volatility basis set schemes

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Table S1. PMCAMx-SR base case scheme OA prediction skill metrics against observed values from STN and IMPROVE networks at biomass-impacted sites.

$PM_{2.5}$ OA	**Mean Observed** ($\mu g\ m^{-3}$)	**Mean Predicted** ($\mu g\ m^{-3}$)	**MB** ($\mu g\ m^{-3}$)	**MAGE** ($\mu g\ m^{-3}$)	**FBIAS**	**FERROR**
bbOA > 0.1 µg m^{-3}						
April	4.51	3.37	-1.08	2.13	-0.16	0.51
July	5.14	5.58	0.45	3.45	0.03	0.54
September	3.45	4.19	0.74	2.70	0.26	0.62
bbOA > 0.5 µg m^{-3}						
April	6.29	4.68	-1.51	2.86	-0.19	0.47
July	6.46	6.46	-0.004	4.43	0.04	0.57
September	4.45	5.60	1.15	4.32	0.34	0.72
bbOA > 1 µg m^{-3}						
April	7.91	6.36	-1.58	4.03	-0.14	0.53
July	8.20	8.21	0.01	5.73	0.06	0.58
September	4.23	7.42	3.18	4.96	0.53	0.78

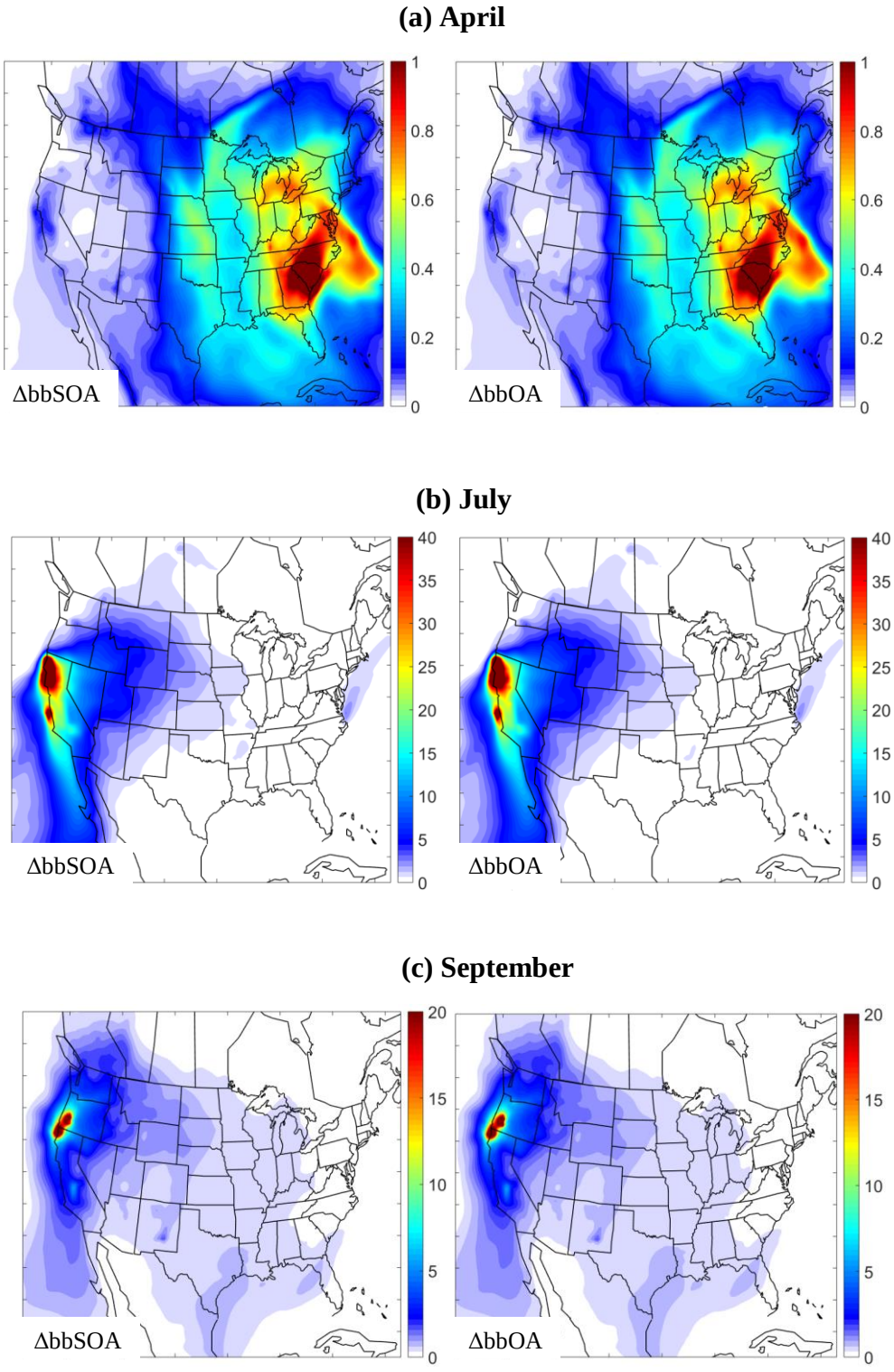

Figure S1: Average predicted absolute (μgm^{-3}) difference (alternative aging scheme minus base case) of ground-level $PM_{2.5}$ total BBSOA and BBOA concentrations from PMCAMx-SR base case and alternative aging scheme simulations during the modeled periods. Positive values indicate that the PMCAMx-SR alternative scheme predicts higher concentrations.

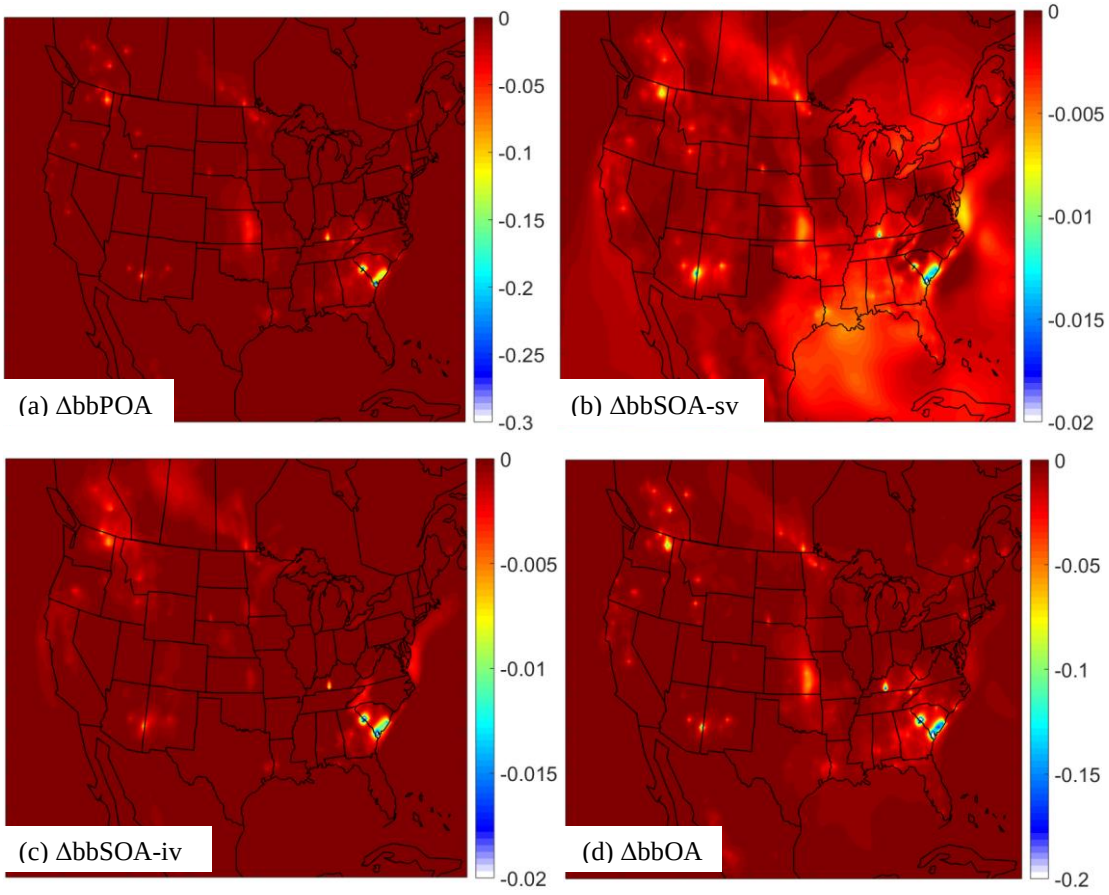

Figure S2: Average predicted increase (μg m^{-3}) of the predictions of the base PMCAMx-SR scheme when the effective enthalpies of vaporization of Ciarelli et al (2017) are used compared to the predictions with the default enthalpies for ground-level $PM_{2.5}$ (a) bbPOA, (b) bbSOA-sv (c) bbSOA-iv and (d) bbOA during April 2008.