Supplemental Information

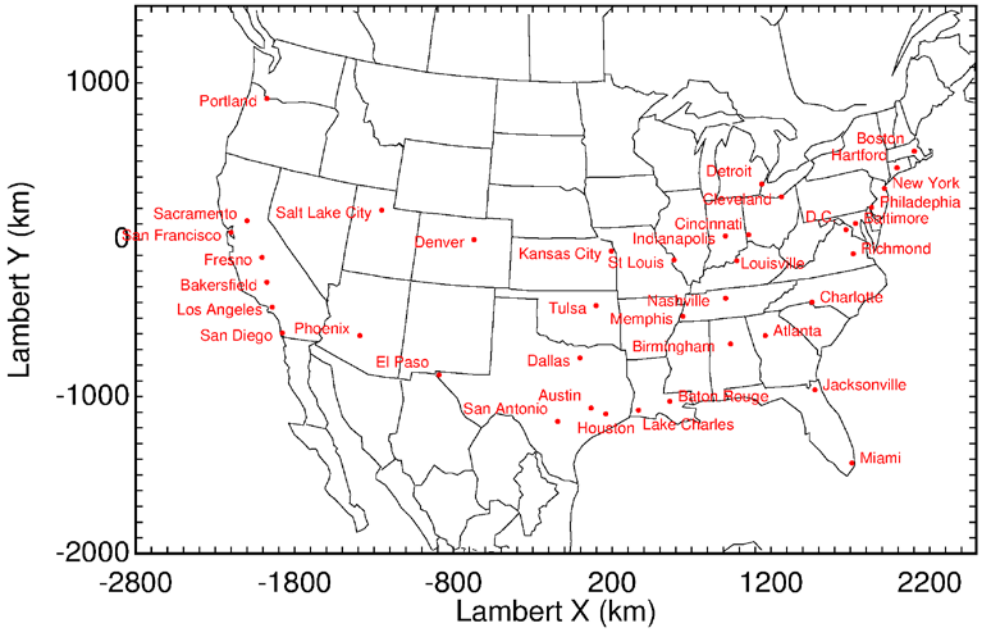

Figure S1. Map of Continental United States and 39 cities of interest

Table S1. Weighted source profile combinations

Source Type	Source Weight
Onroad Gasoline	10% Non-catalyst vehicle + 90% Catalyst Vehicle
Offroad Gasoline	100% Non-catalyst vehicle
Onroad Diesel	100% On-road diesel exhaust
Offroad Diesel	90% Diesel Exhaust from 1970's vehicle + 7% Diesel Exhaust from 1980's vehicle + 3% on-road diesel exhaust
Biomass Burning	90% Residential Wood Combustion + 5% Wildfire + 5% Waste burning
Food Cooking	85% Meat Frying + 15% Charbroiling
Natural Gas	100% Natural Gas Combustion
Distillate Oil	100% Distillate Fuel combustion
Aviation	100% Aircraft Jet Fuel
Cement Manufactures	100% Cement Kiln Gas Combustion
Process Heaters	100% Process Heaters
Coal	100% Coal Combustion
Steel Foundries	50% Steel Electric Arc Furnace + 50% Cast Iron Copper
Pulp and Paper mills	100% Wood Processing
Other	75% construction & demolition + 10% paved road travel + 4% farming ops + 3% brake wear + 2% cattle feedlot + 2% mining ops + 1% solid waste disposal + 1% mineral processing + 1% asphalt production + 1% organic solvent

S1. Quality Assurance – Measured vs Predicted Ozone

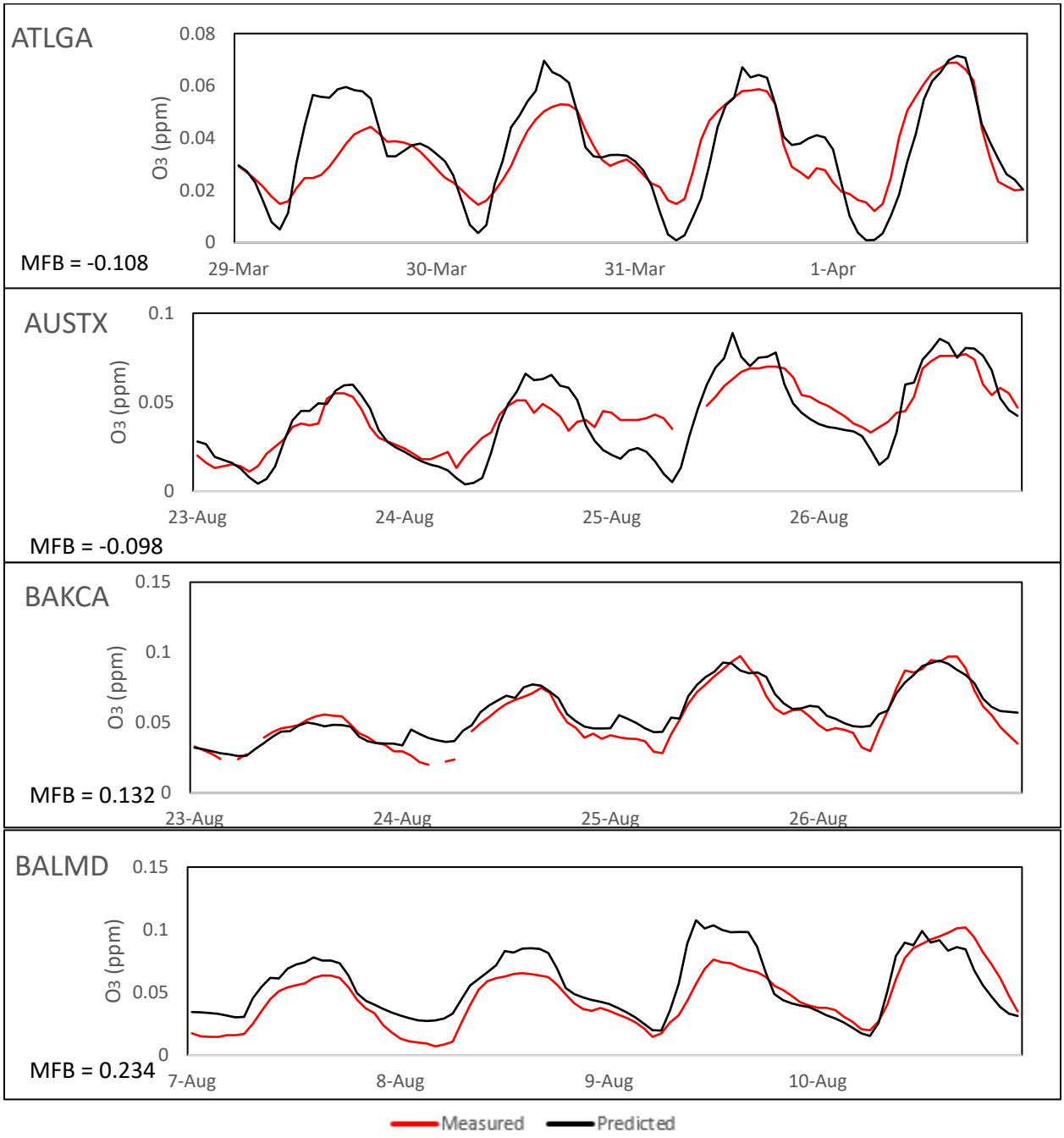

Figure S2. Time series plots of Measured (Red) vs Predicted (black) 1-hr ozone for each average city scenario throughout the U.S.

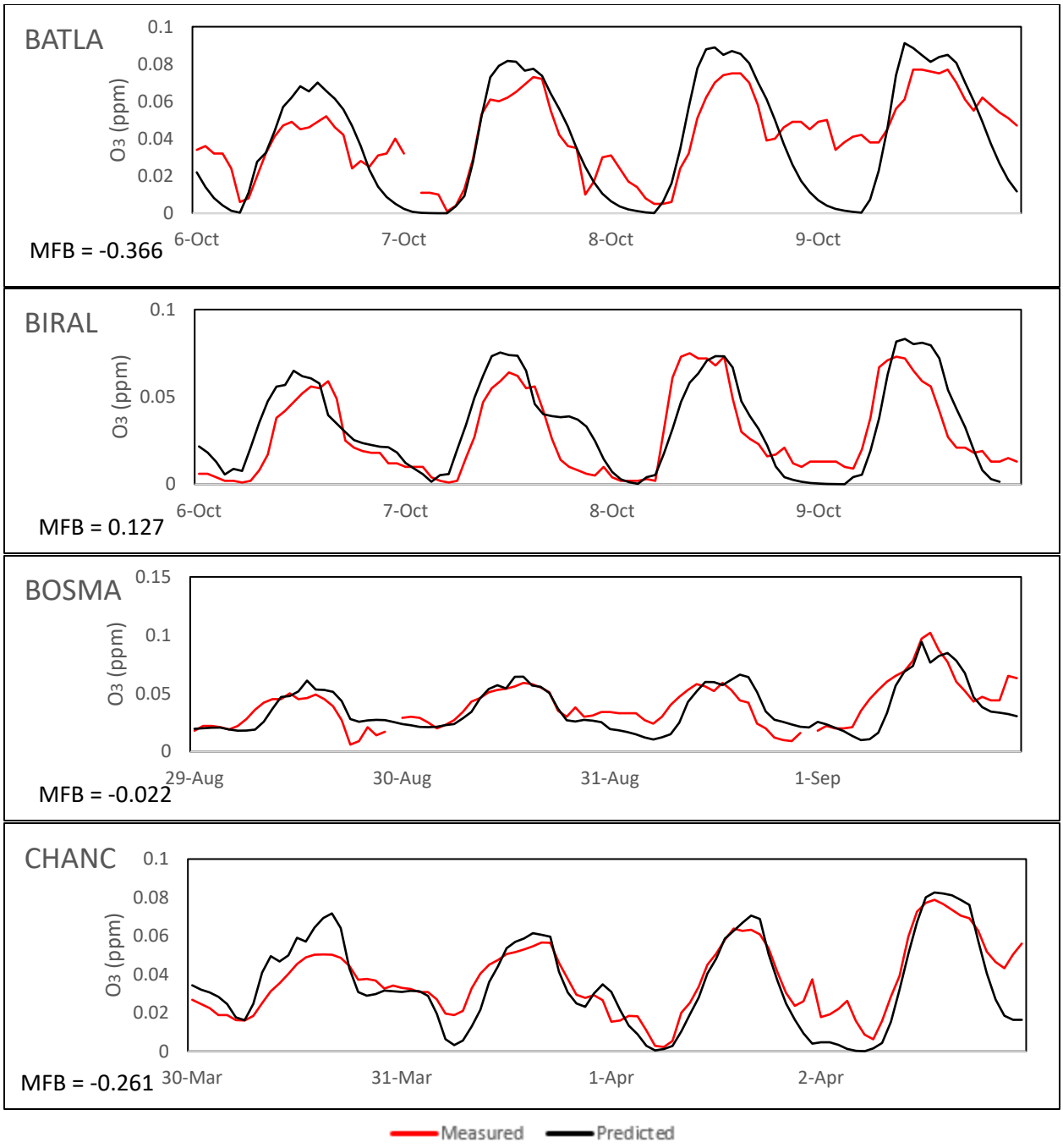

Figure S2 continued. Time series plots of Measured (Red) vs Predicted (black) 1-hr ozone for each average city scenario throughout the U.S.

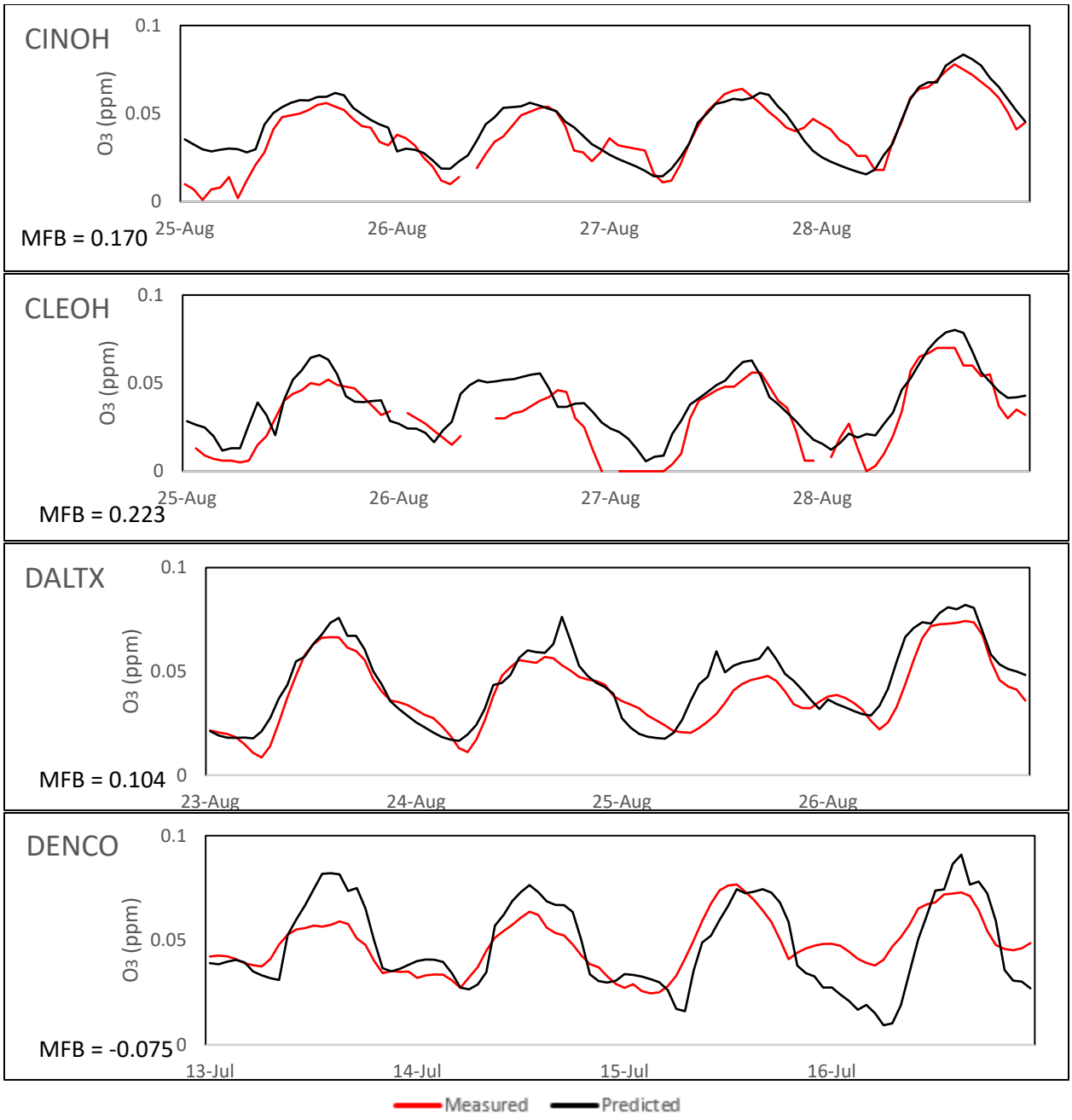

Figure S2 continued. Time series plots of Measured (Red) vs Predicted (black) 1-hr ozone for each average city scenario throughout the U.S.

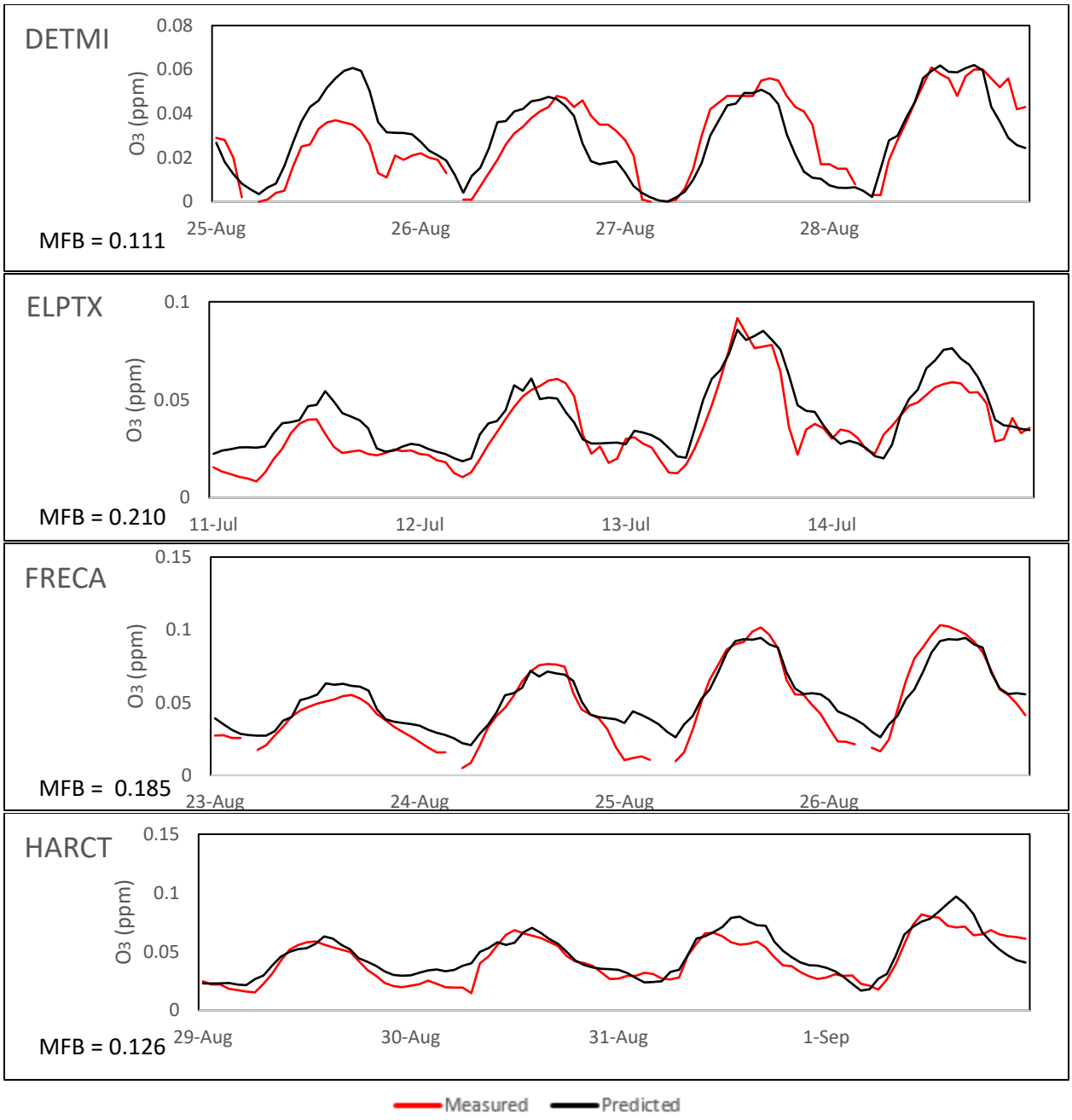

Figure S2 continued. Time series plots of Measured (Red) vs Predicted (black) 1-hr ozone for each average city scenario throughout the U.S.

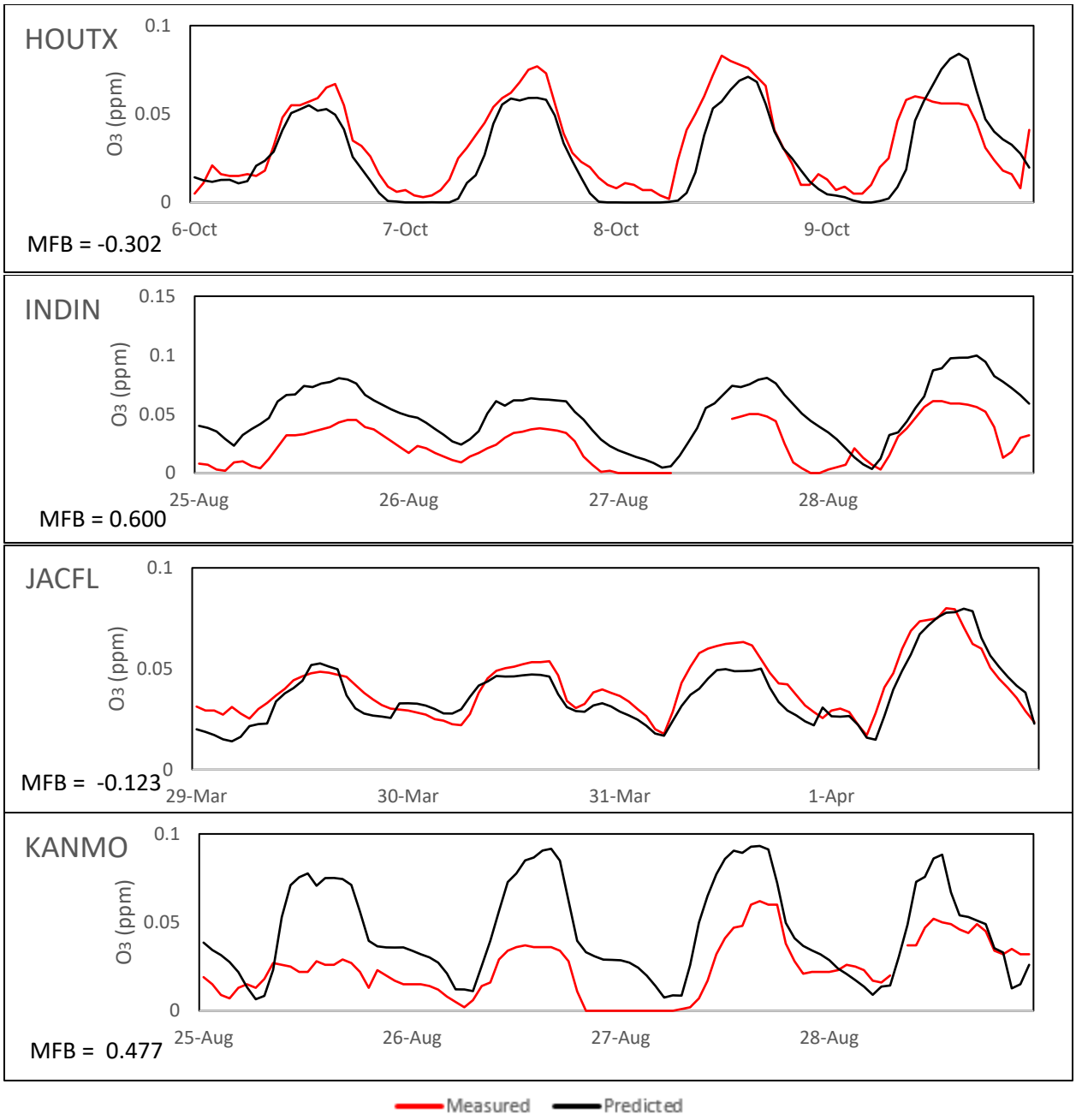

Figure S2 continued. Time series plots of Measured (Red) vs Predicted (black) 1-hr ozone for each average city scenario throughout the U.S.

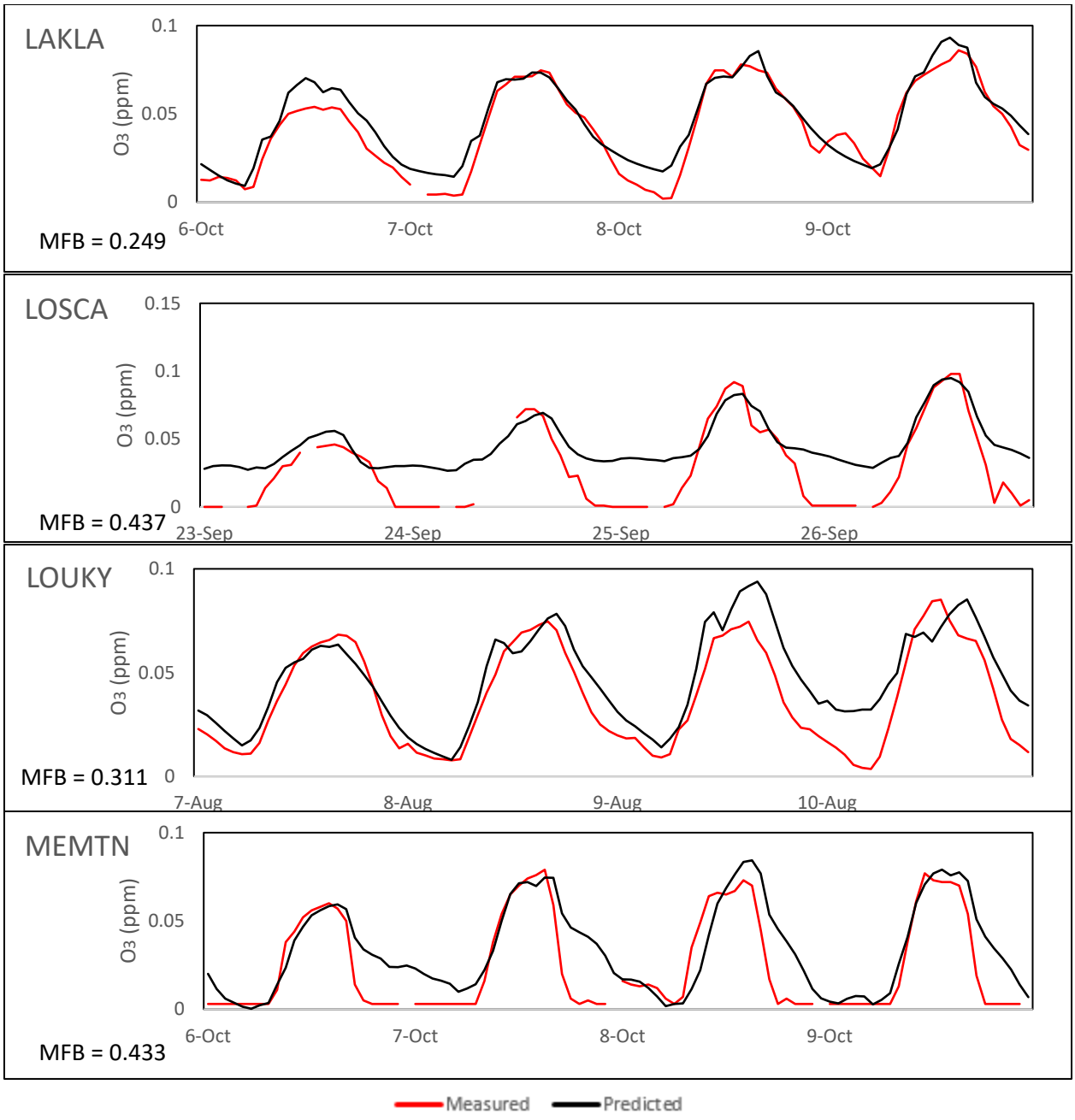

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Figure S2 continued. Time series plots of Measured (Red) vs Predicted (black) 1-hr ozone for each average city scenario throughout the U.S.

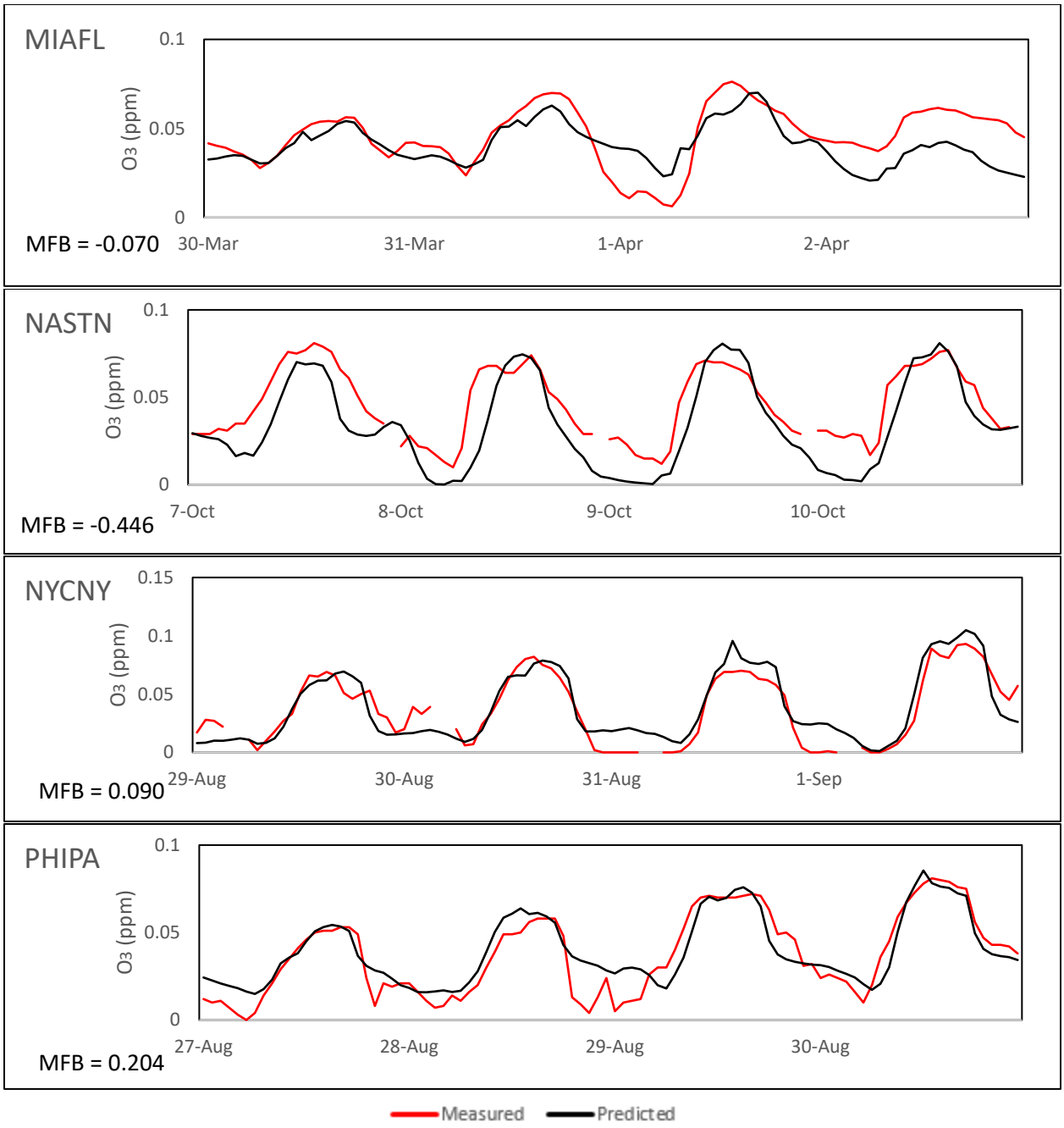

Figure S2 continued. Time series plots of Measured (Red) vs Predicted (black) 1-hr ozone for each average city scenario throughout the U.S.

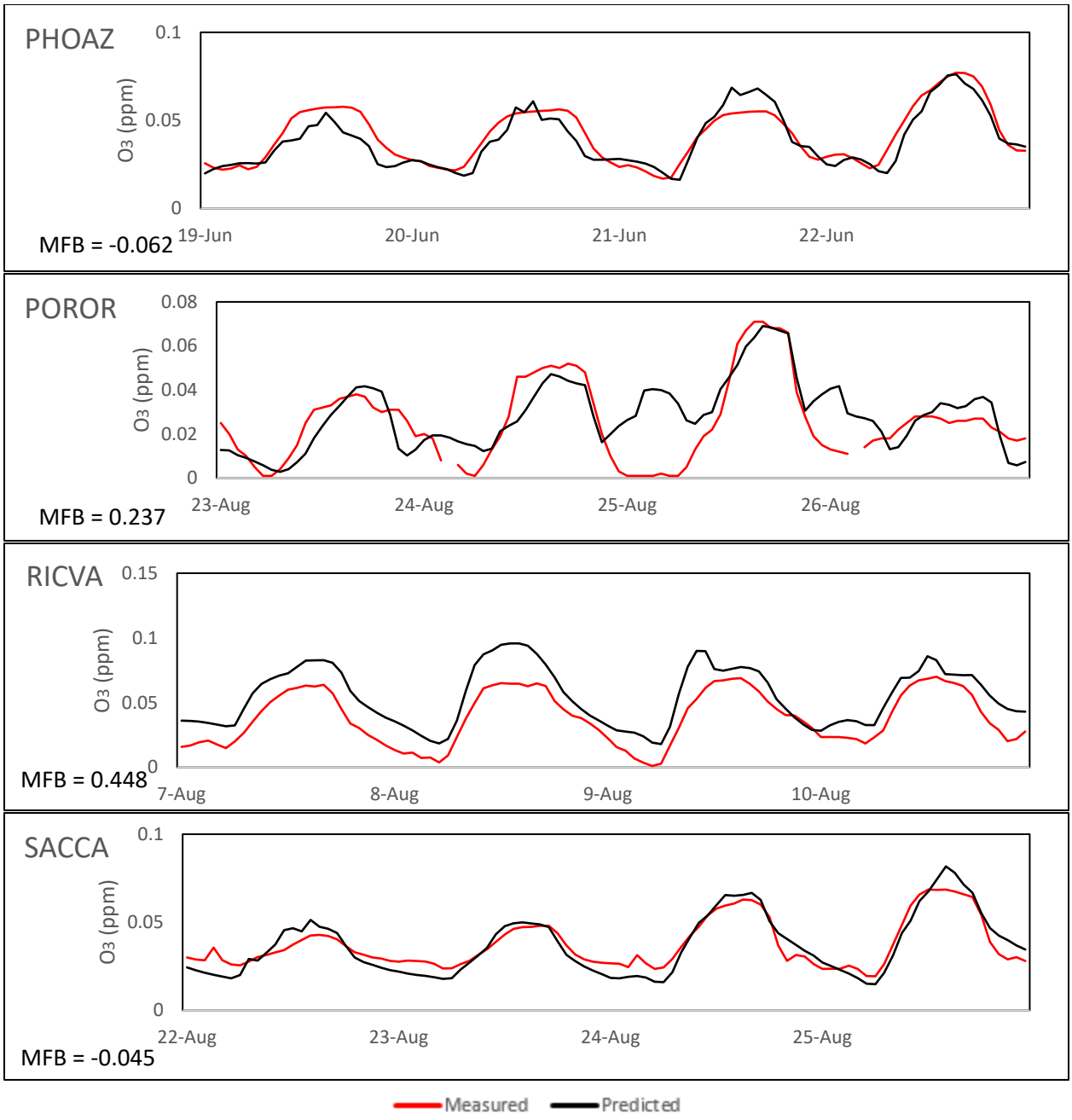

Figure S2 continued. Time series plots of Measured (Red) vs Predicted (black) 1-hr ozone for each average city scenario throughout the U.S.

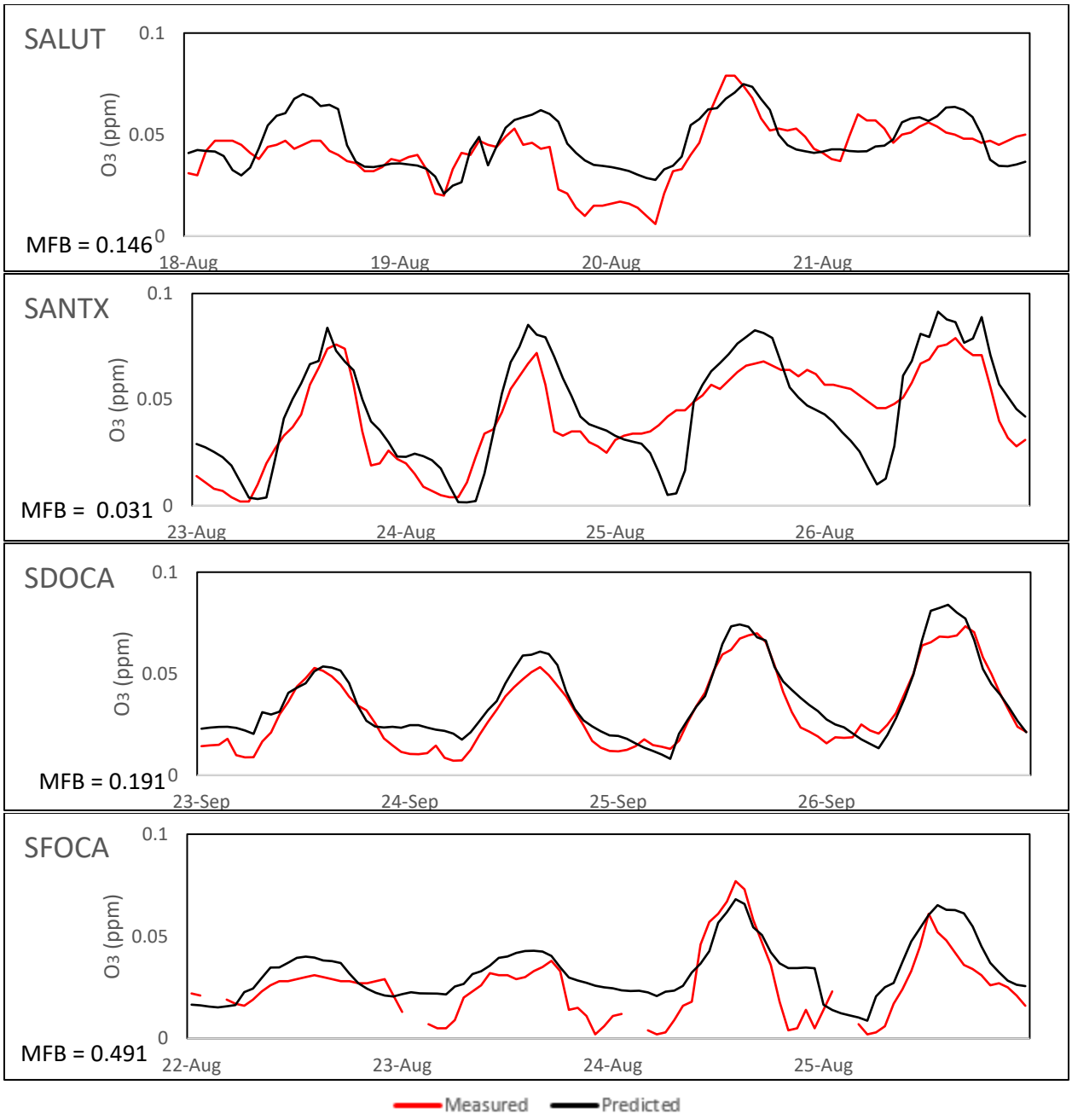

Figure S2 continued. Time series plots of Measured (Red) vs Predicted (black) 1-hr ozone for each average city scenario throughout the U.S.

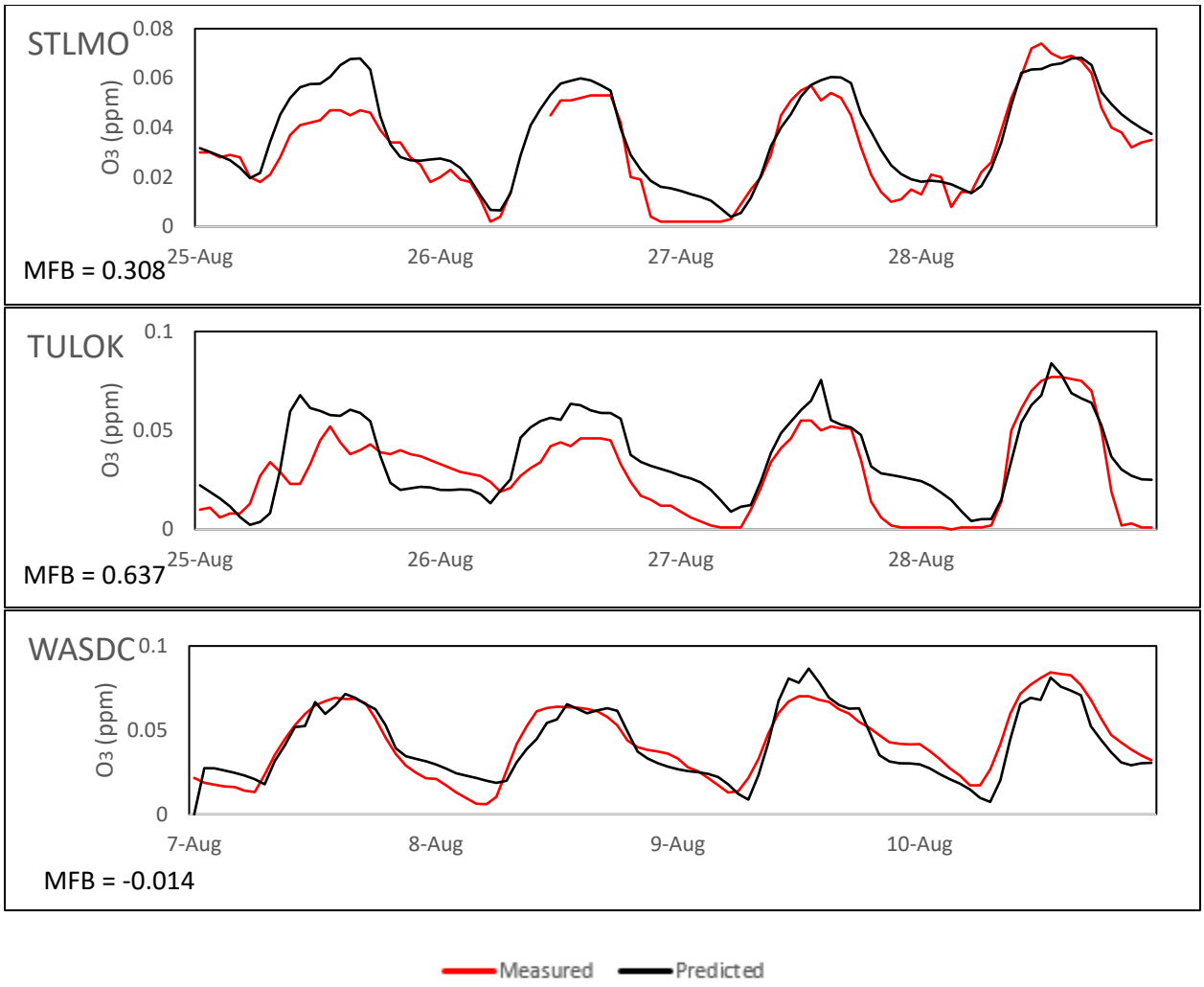

Figure S2 continued. Time series plots of Measured (Red) vs Predicted (black) 1-hr ozone for each average city scenario throughout the U.S.

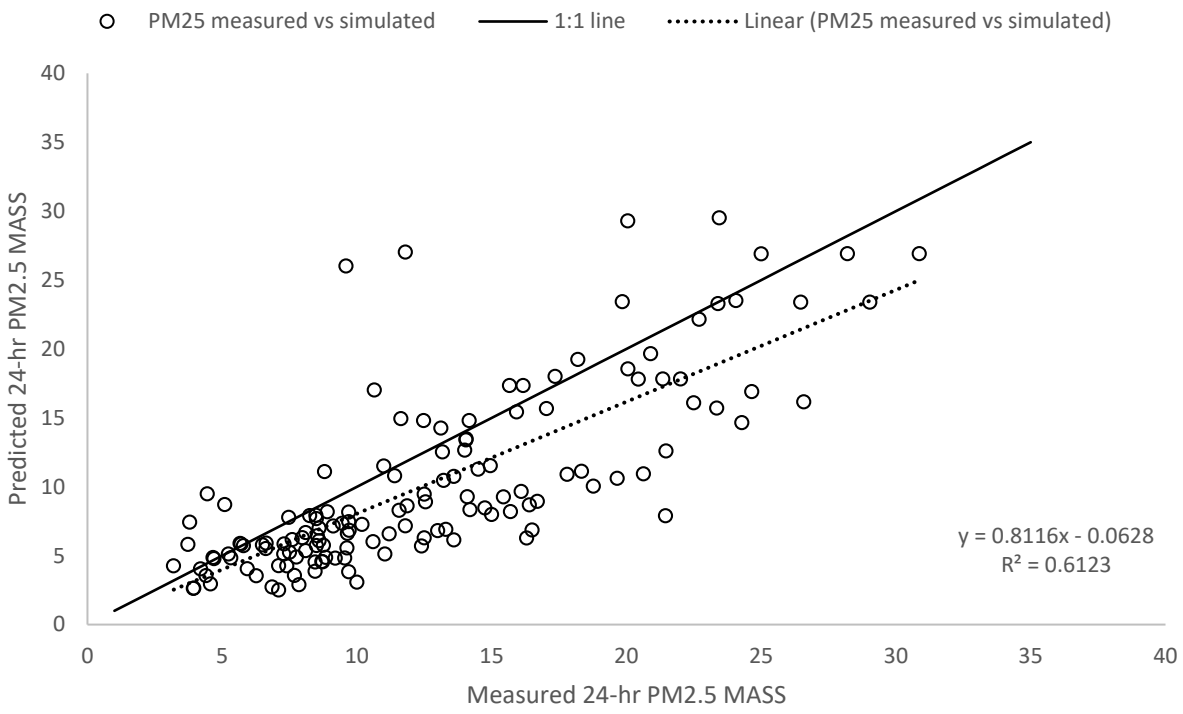

Figure S3. Predicted vs Measured 24-hr average $PM_{2.5}$ Mass ($\mu g/m^3$) for all 39 cities. R^2 value of 0.612 and slope coefficient of 0.8116.

Table S2. Model Performance Statistics. MFB = Mean Fractional Bias and MFE = Mean Fractional Error. EPA modeling criteria MFE < 0.67, RMSE = Root Mean Square Error.

	1-hr Ozone			24-hr avg PM2.5		
City	**MFB**	**MFE**	**RMSE (ppm)**	**MFB**	**MFE**	**RMSE (μg/m^3)**
ATLGA	-0.108	0.367	0.011	-0.379	0.379	2.271
AUSTX	-0.098	0.415	0.016	-0.616	0.616	3.862
BAKCA	0.132	0.232	0.013	-0.334	0.339	2.952
BALMD	0.234	0.325	0.017	-0.034	0.143	3.293
BATLA	-0.366	0.65	0.019	0.221	0.224	2.436
BIRAL	0.127	0.576	0.018	-0.431	0.486	2.552
BOSMA	-0.022	0.313	0.013	-0.196	0.237	4.169
CHANC	-0.261	0.416	0.011	0.113	0.385	1.820
CINOH	0.17	0.307	0.011	-0.481	0.501	1.363
CLEOH	0.223	0.294	0.011	-0.208	0.208	1.648
DALTX	0.104	0.2	0.009	-0.336	0.336	4.092
DENCO	-0.075	0.238	0.013	-0.205	0.213	1.879
DETMI	0.111	0.46	0.012	-0.336	0.659	2.690
ELPTX	0.21	0.285	0.011	-0.632	0.632	2.965
FRECA	0.185	0.259	0.012	-0.665	0.665	3.890
HARCT	0.126	0.196	0.010	-0.658	0.658	2.116
HOUTX	-0.302	0.466	0.014	0.111	0.388	2.163
INDIN	0.6	0.635	0.023	-0.315	0.315	1.374
JACFL	-0.123	0.194	0.008	-0.52	0.533	5.961
KANMO	0.477	0.592	0.027	-0.465	0.465	2.491
LAKLA	0.249	0.299	0.009	0.426	0.426	6.713
LOSCA	0.437	0.442	0.016	-0.332	0.332	1.388
LOUKY	0.311	0.344	0.014	-0.116	0.236	3.242
MEMTN	0.433	0.614	0.017	-0.263	0.263	1.328
MIAFL	-0.07	0.283	0.013	-0.512	0.527	3.295
NASTN	-0.446	0.604	0.017	-0.145	0.145	0.961
NYCNY	0.09	0.29	0.011	-0.438	0.438	4.482
PHIPA	0.204	0.334	0.010	-0.138	0.152	1.420
PHOAZ	-0.062	0.194	0.011	-0.065	0.065	0.525
PROR	0.237	0.549	0.014	-0.004	0.363	0.940
RICVA	**0.448**	**0.451**	**0.018**	**-1.053**	**1.053**	**7.785**
SACCA	-0.045	0.122	0.005	0.04	0.04	0.190
SALUT	0.146	0.269	0.013	-0.385	0.385	2.186
SANTX	0.031	0.395	0.016	-0.629	0.629	3.755
SDOCA	0.191	0.302	0.009	-0.437	0.437	1.988
SFOCA	0.491	0.522	0.013	-0.244	0.244	1.982
STLMO	0.308	0.368	0.011	0.468	0.509	3.777

TULOK	**0.637**	**0.739**	**0.015**	**-0.25**	**0.25**	**1.320**
WASDC	-0.014	0.232	0.009	-0.071	0.117	2.985
Average	0.126	0.379	0.013	-0.27	0.384	2.724

MFB was calculated using equation 1:

$$\text{MFB} = \frac{2}{N}\sum_{i=1}^{N}\frac{(Pred_{x,t}^{i} - Obs_{x,t}^{i})}{(Pred_{x,t}^{i} + Obs_{x,t)}^{i}} \quad (1)$$

MFE was calculated using equation 2:

$$\text{MFE} = \frac{2}{N}\sum_{i=1}^{N}\frac{|Pred_{x,t}^{i} - Obs_{x,t}^{i}|}{(Pred_{x,t}^{i} + Obs_{x,t)}^{i}} \quad (2)$$

RMSE was calculated using equation 3:

$$RMSE = \sqrt{\frac{\sum_{i=1}^{n}(Pred_{x,t}^{i} - Obs_{x,t}^{i})^2}{n}} \quad (3)$$

Figures S4-S7 compares $PM_{2.5}$and $PM_{0.1}$ mass contributions from the explicitly tracked sources. In many cases, hot-spots were predicted that over-whelmed contributions in other areas. The concentration scales in Figures S4-S7 were adjusted to better view the broad impacts from all sources throughout the 12km-continental US grid. On road diesel, on road gasoline and food cooking sources result in hotspots that highlight the metropolitan areas of the United States. Aviation sources highlight both metropolitan airports and Naval / Air Force bases. Various industrial sources such as cement manufacturing and wood/paper mills highlight industrial plants in the South East United states. Natural gas fueled emissions highlight metropolitan areas that utilize large quantities of natural gas and industrial areas that consume natural gas. Coal combustion emissions highlight many metropolitan areas in the Midwest that generate a large percentage of their electricity from coal-fired power stations.

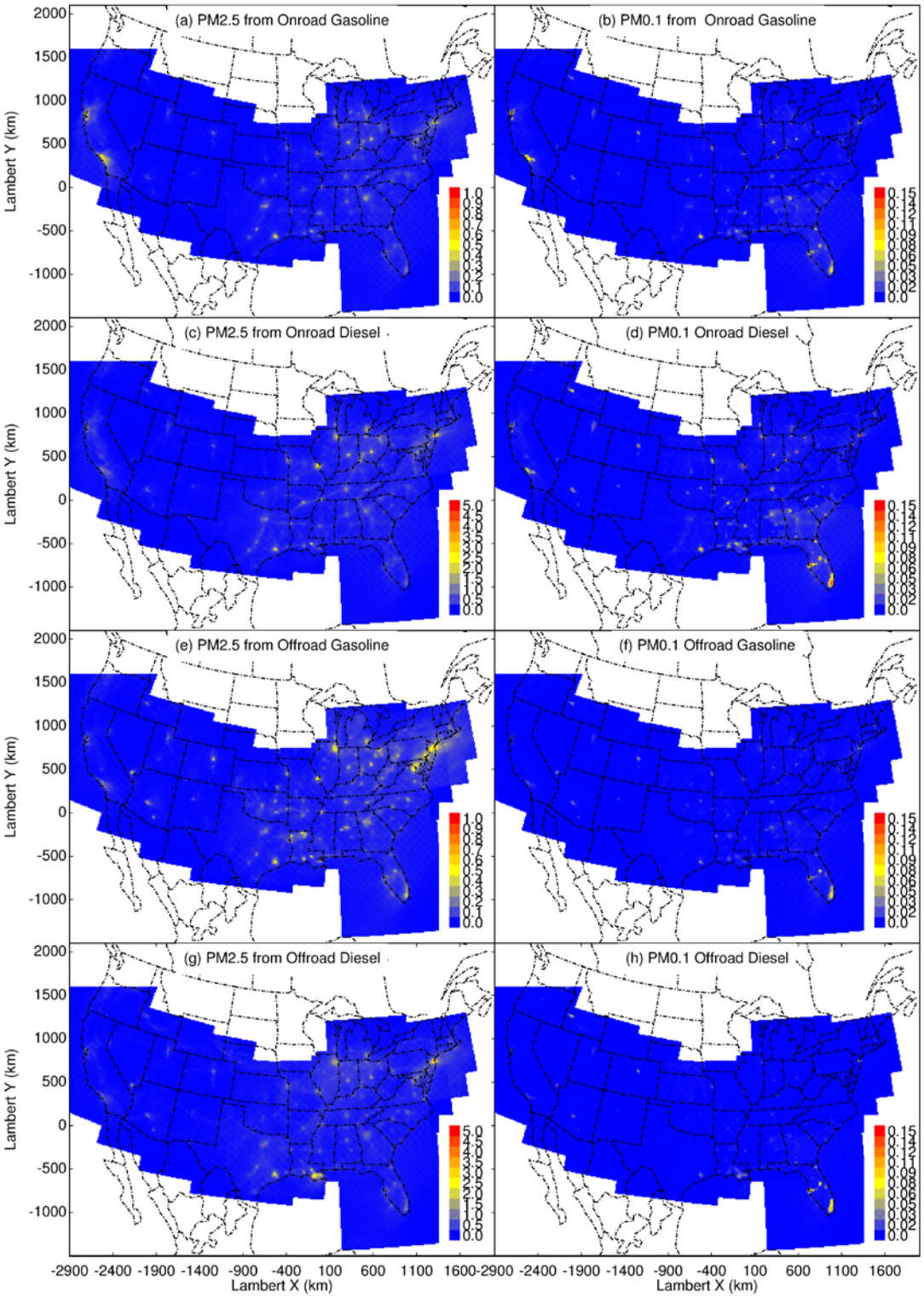

Figure S4. Field plot "snap shot" of Continental US $PM_{2.5}$ and $PM_{0.1}$ 24-hr average mass (µg/m^3) for gasoline and diesel. Scale drawn to highlight all areas of US. Actual max for (a) 0.582 µg/m^3 (b) 0.109 µg/m^3 (c) 3.365 µg/m^3 (d) 0.155 µg/m^3 (e) 0.902 µg/m^3 (f) 0.112 µg/m^3 (g) 7.534 µg/m^3 (h) 0.129 µg/m^3

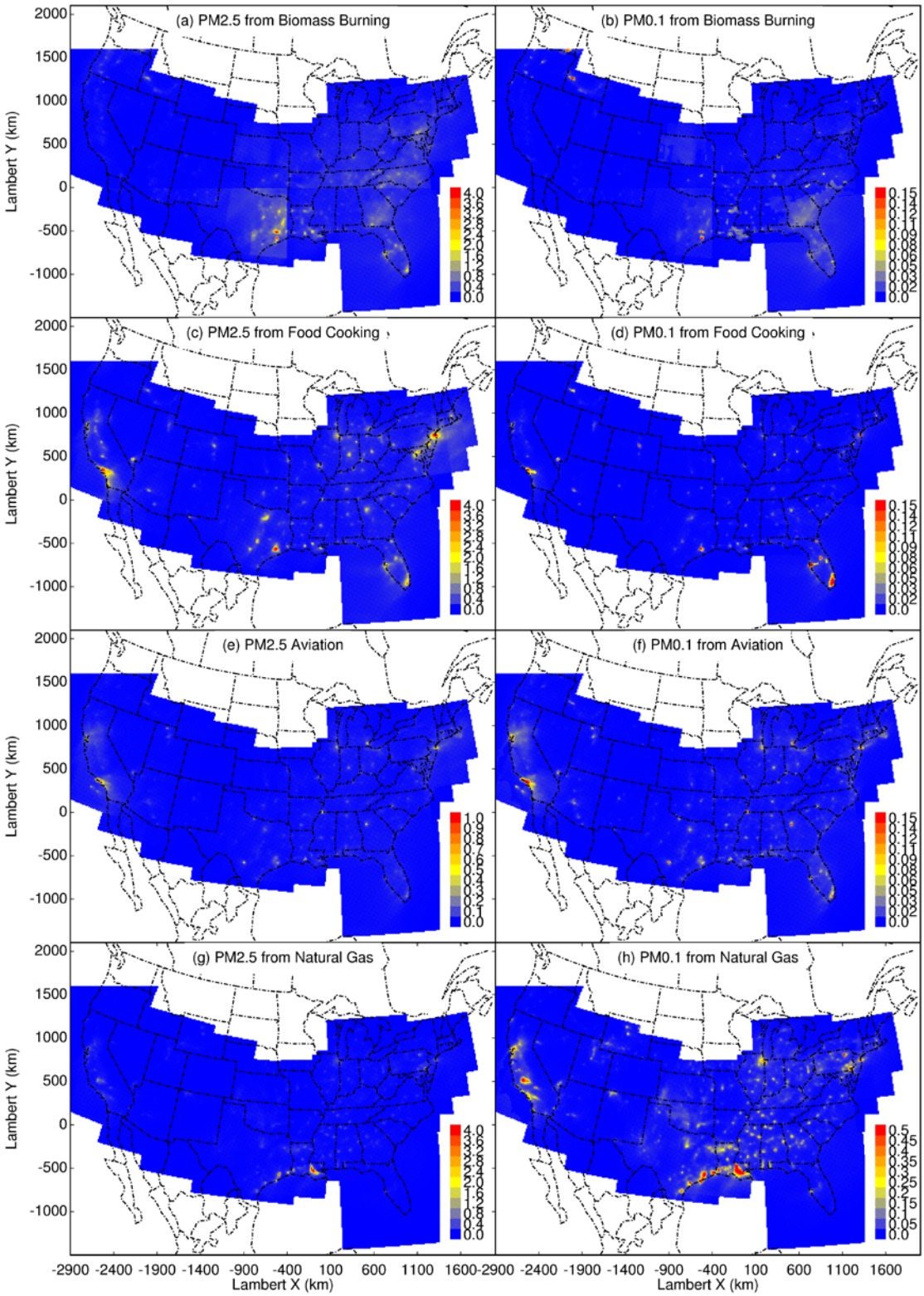

Figure S5. Field plot "snap shot" of Continental US $PM_{2.5}$ and $PM_{0.1}$ 24-hr average mass ($\mu g/m^3$) for biomass burning, food cooking, aviation, and natural gas. Scale drawn to highlight all areas of US. Actual max for (a) 6.461 $\mu g/m^3$ (b) 0.388 $\mu g/m^3$ (c) 10.18 $\mu g/m^3$ (d) 0.349 $\mu g/m^3$ (e) 1.851 $\mu g/m^3$ (f) 0.556 $\mu g/m^3$ (g) 7.147 $\mu g/m^3$ (h) 3.625 $\mu g/m^3$

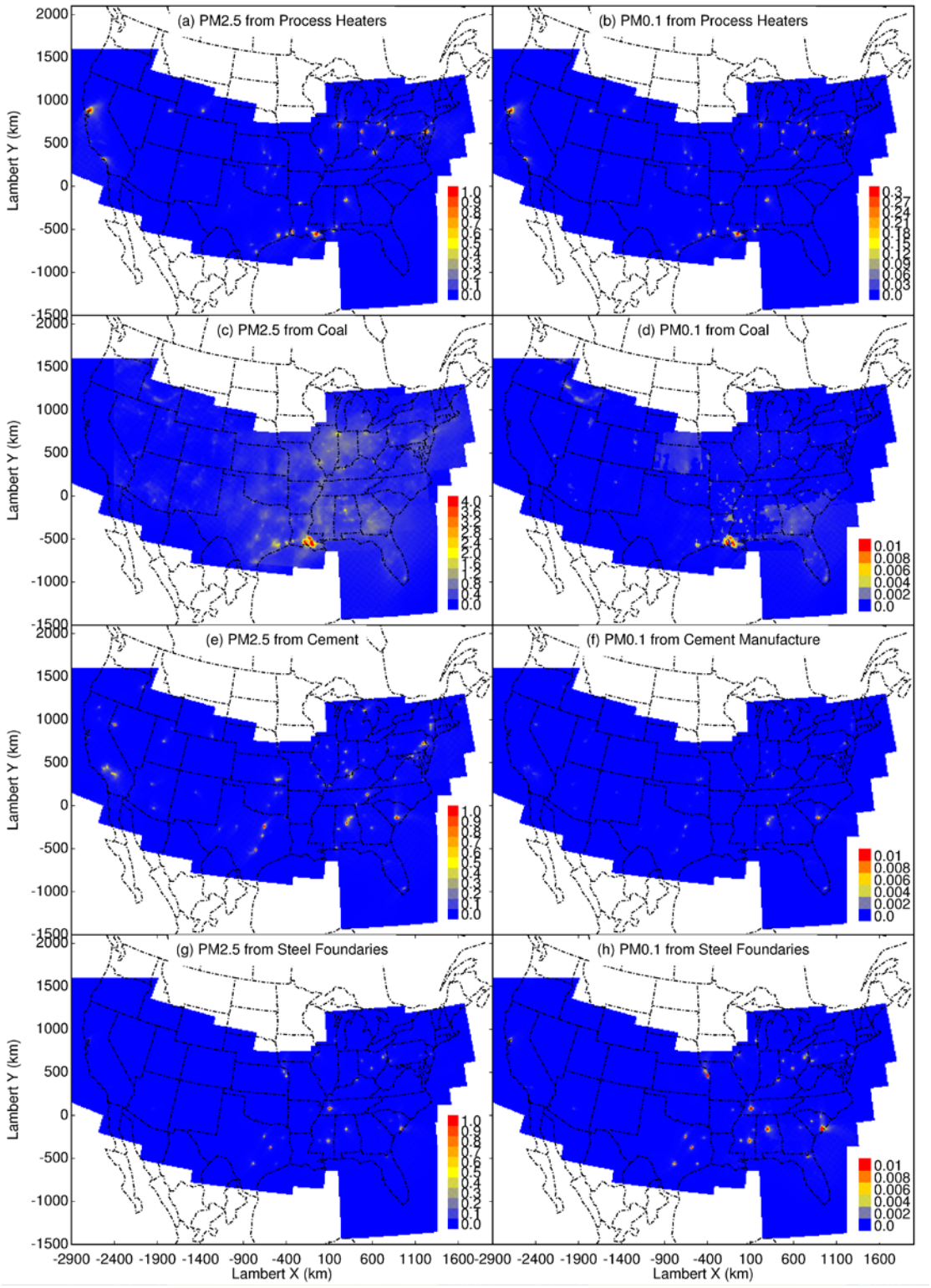

Figure S6. Field plot "snap shot" of Continental US $PM_{2.5}$ and $PM_{0.1}$ 24-hr average mass ($\mu g/m^3$) for process heaters, coal, cement, and steel foundries. Scale drawn to highlight all areas of US. Actual max for (a) 3.968 $\mu g/m^3$ (b) 1.141 $\mu g/m^3$ (c) 20.254 $\mu g/m^3$ (d) 0.040 $\mu g/m^3$ (e) 2.201 $\mu g/m^3$ (f) 1.275 $\mu g/m^3$ (g) 1.317 $\mu g/m^3$ (h) 0.0652 $\mu g/m^3$

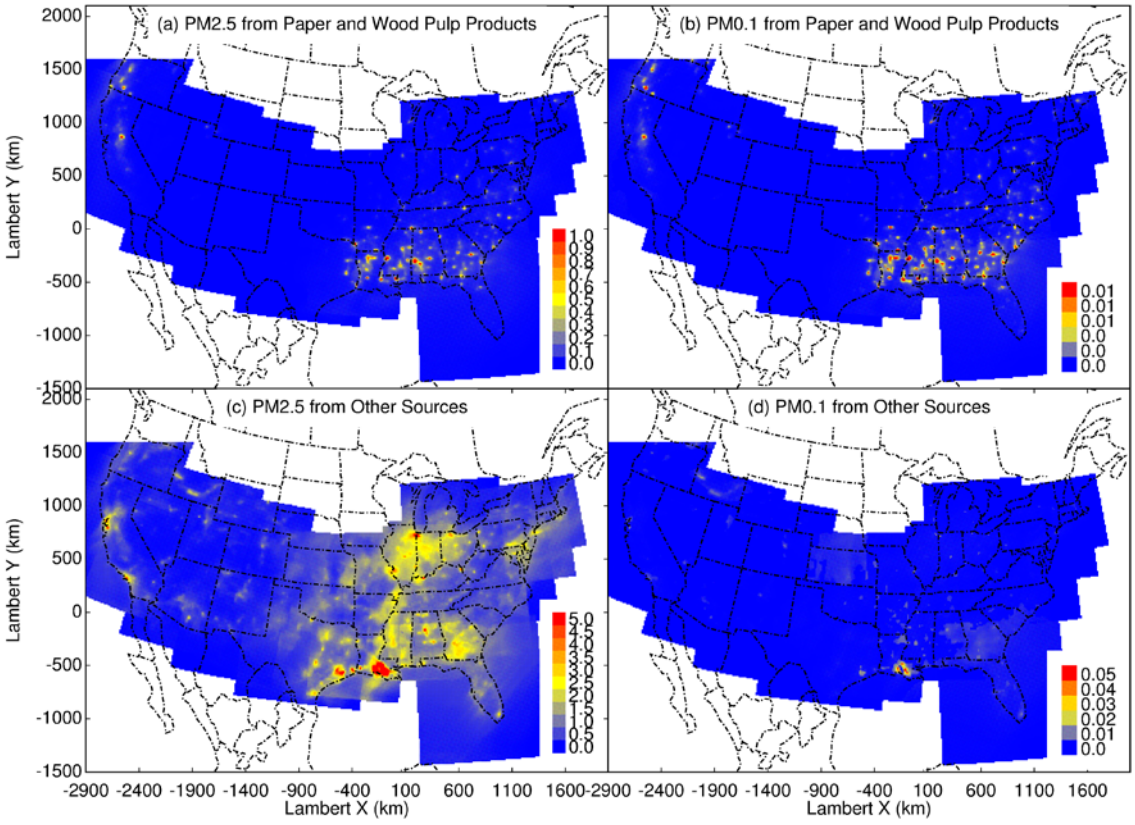

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Figure S7. Field plot "snap shot" of Continental US $PM_{2.5}$ and $PM_{0.1}$ 24-hr average mass (μg/m^3) for paper and wood pulp products and "other sources". Scale drawn to highlight all areas of US. Actual max for (a) 3.968 μg/m^3 (b) 1.141 μg/m^3 (c) 84.18 μg/m^3 (d) 0.133 μg/m^3

145

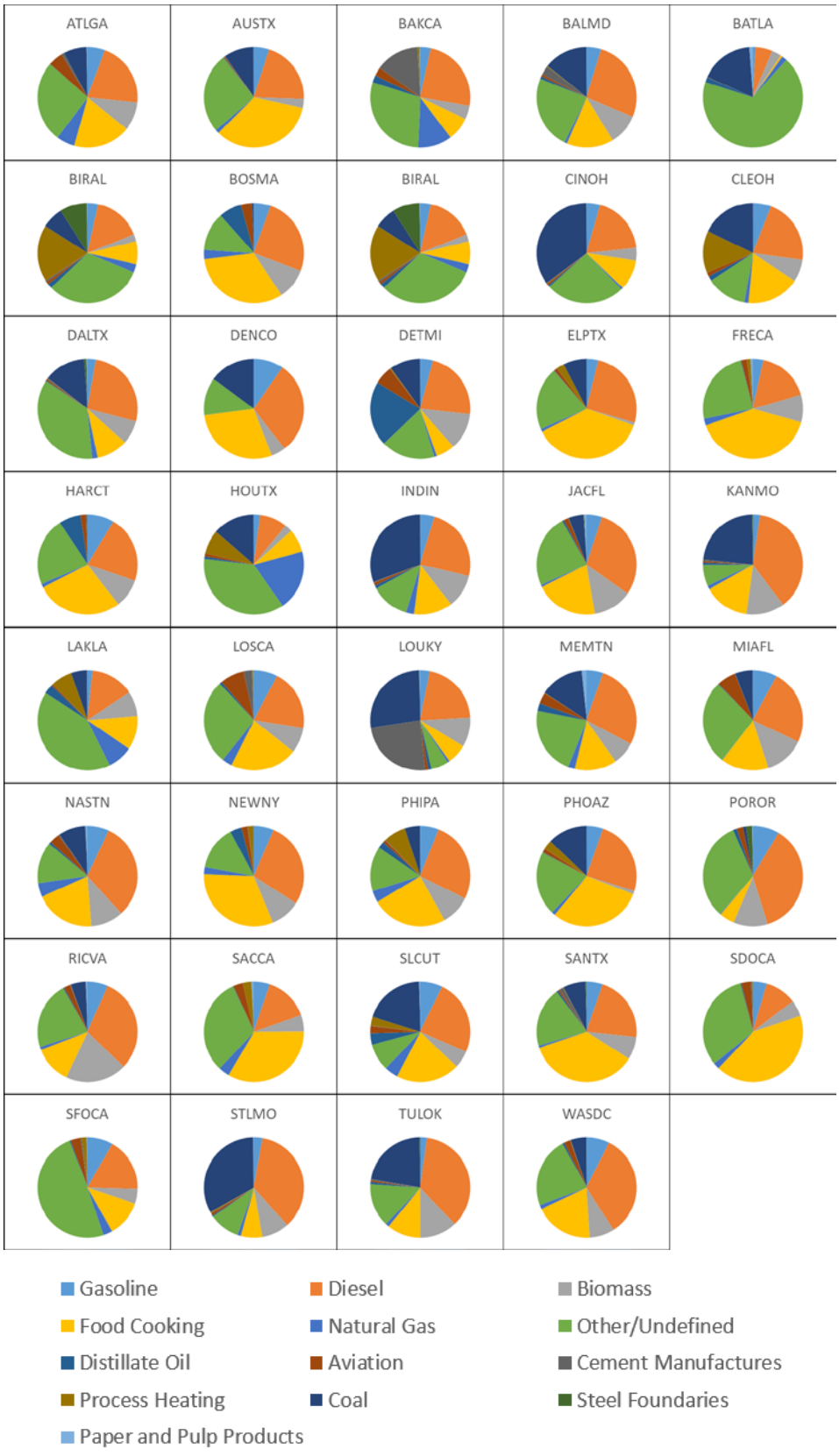

Figure S8. $PM_{2.5}$ source contribution for 39 cities across the continental US

S3. PM source contribution for each city. Tables are separated by region

Table S3a. Source contribution for PM2.5 (μg/m^3) for the EAST

	HARCT	NEWNY	PHIPA	BOSMA	BALMD	RICVA	WASDC
Gasoline (onroad + offroad)	1.72E-01	6.59E-01	5.18E-01	2.67E-01	3.20E-01	2.14E-01	4.30E-01
Diesel (onroad + offroad)	4.32E-01	2.85E+00	2.29E+00	1.25E+00	1.82E+00	9.97E-01	1.96E+00
Biomass	1.85E-01	9.95E-01	8.32E-01	4.93E-01	6.76E-01	6.38E-01	4.61E-01
Food Cooking	5.58E-01	3.27E+00	2.11E+00	1.59E+00	1.03E+00	3.95E-01	1.11E+00
Natural Gas	2.34E-02	2.38E-01	3.28E-01	1.48E-01	5.98E-02	3.26E-02	7.93E-02
Other/Undefined	4.40E-01	1.47E+00	1.26E+00	6.16E-01	1.62E+00	7.08E-01	1.32E+00
Distillate Oil	1.39E-01	3.81E-01	1.92E-01	3.58E-01	5.73E-02	1.21E-02	3.59E-02
Aviation	3.44E-02	2.04E-01	7.63E-02	1.68E-01	5.01E-02	6.59E-02	1.17E-01
Cement Manufactures	1.08E-02	1.32E-02	1.35E-02	1.28E-03	2.03E-01	4.28E-03	6.98E-03
Process Heating	7.92E-04	1.80E-01	6.14E-01	3.34E-04	1.70E-02	2.15E-03	5.82E-03
Coal	1.33E-04	1.47E-02	4.19E-01	3.69E-02	9.50E-01	1.55E-01	2.90E-01
Steel Foundries	1.58E-04	3.93E-03	2.92E-03	5.35E-05	9.04E-04	9.08E-04	6.94E-04
Paper and Pulp Products	3.96E-04	5.34E-03	1.42E-02	1.73E-03	1.03E-02	2.12E-02	9.85E-03

Table S3b. Source contribution for PM0.1 (μg/m^3) for the EAST

	HARCT	NEWNY	PHIPA	BOSMA	BALMD	RICVA	WASDC
Gasoline (onroad + offroad)	9.81E-03	4.45E-02	4.03E-02	2.16E-02	7.45E-03	5.14E-03	1.21E-02
Diesel (onroad + offroad)	1.47E-02	4.47E-02	6.14E-02	2.92E-02	6.60E-03	4.18E-03	1.73E-02
Biomass	4.10E-03	4.82E-02	6.86E-02	1.46E-02	5.24E-03	5.70E-03	7.18E-03
Food Cooking	1.30E-02	6.00E-02	5.32E-02	6.51E-02	8.47E-03	3.25E-03	2.00E-02
Natural Gas	1.92E-02	1.94E-01	2.44E-01	1.36E-01	2.90E-02	1.71E-02	5.38E-02
Other/Undefined	5.42E-04	2.11E-03	2.17E-03	1.54E-03	2.58E-04	1.61E-04	4.22E-04
Distillate Oil	1.14E-12	2.41E-11	3.23E-12	1.29E-11	1.05E-12	1.34E-13	1.68E-12
Aviation	1.07E-02	5.47E-02	1.84E-02	6.68E-02	9.08E-03	1.79E-02	3.56E-02
Cement Manufactures	3.33E-05	7.24E-05	4.60E-05	4.42E-06	3.29E-04	1.25E-06	5.04E-06
Process Heating	4.20E-05	5.92E-02	1.59E-01	3.11E-05	1.29E-03	5.52E-05	1.97E-04
Coal	1.33E-04	2.13E-05	7.25E-04	9.82E-05	1.52E-04	3.53E-05	9.25E-05
Steel Foundries	1.79E-06	4.00E-04	1.10E-04	1.27E-06	2.28E-06	2.40E-06	3.37E-06
Paper and Pulp Products	4.25E-06	5.23E-05	2.56E-04	4.17E-05	5.63E-05	1.47E-04	4.57E-05

Table S4a. Source contribution for PM2.5 (µg/m^3) for the SOUTH EAST

	ATLGA	MIAFL	JACFL	CHANC	BIRAL
Gasoline (onroad + offroad)	4.85E-01	3.06E-01	1.59E-01	3.00E-01	5.23E-01
Diesel (onroad + offroad)	1.82E+00	9.64E-01	9.50E-01	5.47E-01	2.33E+00
Biomass	7.98E-01	5.11E-01	3.98E-01	8.72E-02	3.52E-01
Food Cooking	1.60E+00	6.10E-01	6.48E-01	2.96E-01	1.12E+00
Natural Gas	5.04E-01	4.71E-03	2.26E-02	2.22E-02	4.09E-01
Other/Undefined	2.29E+00	1.08E+00	7.50E-01	2.83E-01	4.77E+00
Distillate Oil	8.33E-03	8.83E-03	1.87E-02	1.89E-02	2.22E-01
Aviation	4.03E-01	2.40E-01	4.84E-02	3.49E-01	1.32E-01
Cement Manufactures	6.73E-02	3.37E-03	2.59E-03	6.67E-04	8.31E-02
Process Heating	2.97E-03	3.73E-04	1.50E-03	5.16E-04	2.77E+00
Coal	6.40E-01	2.21E-01	1.54E-01	8.20E-02	1.05E+00
Steel Foundries	1.90E-03	3.43E-04	6.22E-03	2.01E-03	1.31E+00
Paper and Pulp Products	3.60E-02	7.30E-03	2.69E-02	9.22E-18	5.26E-02

Table S4b. Source contribution for PM0.1 (µg/m^3) for the SOUTH EAST

	ATLGA	MIAFL	JACFL	CHANC	BIRAL
Gasoline (onroad + offroad)	8.16E-02	3.58E-03	2.62E-02	1.46E-01	6.62E-02
Diesel (onroad + offroad)	9.19E-02	3.69E-03	4.38E-02	1.65E-01	1.16E-01
Biomass	8.59E-02	2.23E-03	2.84E-02	8.97E-02	1.88E-02
Food Cooking	7.04E-02	2.58E-03	5.26E-02	7.40E-02	5.46E-02
Natural Gas	4.22E-01	1.51E-02	1.54E-01	2.13E-02	3.17E-01
Other/Undefined	4.53E-03	2.35E-04	2.01E-03	3.92E-03	1.01E-02
Distillate Oil	7.39E-09	7.64E-13	1.41E-09	4.62E-08	4.78E-09
Aviation	1.45E-01	5.66E-03	2.10E-02	2.46E-01	5.60E-02
Cement Manufactures	4.53E-04	3.96E-06	1.55E-05	3.09E-05	6.10E-04
Process Heating	3.98E-04	4.07E-05	2.73E-04	4.94E-04	8.97E-01
Coal	1.76E-03	4.82E-05	4.12E-04	1.60E-03	2.85E-03
Steel Foundries	8.55E-05	3.82E-06	5.16E-04	6.98E-04	1.36E-01
Paper and Pulp Products	6.11E-04	5.89E-05	5.64E-04	7.06E-18	1.53E-03

Table S5a. Source contribution for PM2.5 (μg/m^3) for the SOUTH

	HOUTX	LAKLA	BATLA	SANTX	DALTX	AUSTX
Gasoline (onroad + offroad)	4.26E-01	2.92E-01	1.66E-01	2.20E-01	2.22E-02	2.02E-01
Diesel (onroad + offroad)	1.83E+00	2.45E+00	9.41E-01	9.10E-01	2.14E-01	8.43E-01
Biomass	5.07E-01	1.42E+00	5.39E-01	3.12E-01	6.29E-02	1.20E-01
Food Cooking	1.58E+00	1.93E+00	1.07E-01	1.52E+00	8.14E-02	1.39E+00
Natural Gas	4.08E+00	1.43E+00	2.92E-01	2.95E-02	1.42E-02	4.83E-02
Other/Undefined	7.63E+00	7.30E+00	1.21E+01	8.17E-01	2.92E-01	1.06E+00
Distillate Oil	1.65E-01	5.38E-01	2.87E-01	2.56E-02	1.97E-03	8.27E-03
Aviation	2.01E-01	9.97E-02	1.52E-02	2.25E-02	3.81E-03	1.45E-02
Cement Manufactures	2.66E-04	1.28E-03	5.63E-04	5.31E-02	2.98E-03	4.01E-03
Process Heating	1.63E+00	1.20E+00	4.73E-03	6.44E-03	6.44E-04	4.02E-04
Coal	2.82E+00	9.03E-01	3.02E+00	3.02E-01	1.08E-01	3.94E-01
Steel Foundries	2.55E-03	1.68E-03	8.57E-04	1.44E-02	5.75E-03	8.62E-04
Paper and Pulp Products	1.30E-02	3.83E-02	2.20E-01	6.36E-03	3.84E-03	2.98E-03

Table S5b. Source contribution for PM0.1 (μg/m^3) for the SOUTH

	HOUTX	LAKLA	BATLA	SANTX	DALTX	AUSTX
Gasoline (onroad + offroad)	5.07E-02	2.30E-02	1.77E-02	2.78E-02	7.64E-04	2.64E-02
Diesel (onroad + offroad)	4.72E-02	1.47E-01	8.16E-02	3.97E-02	4.31E-03	3.70E-02
Biomass	2.58E-02	4.48E-02	2.06E-02	1.81E-02	6.89E-04	5.03E-03
Food Cooking	4.77E-02	6.69E-03	3.23E-03	4.89E-02	4.99E-04	5.15E-02
Natural Gas	3.20E+00	5.94E-01	1.80E-01	2.31E-02	8.48E-03	4.25E-02
Other/Undefined	1.45E-02	1.19E-02	2.45E-02	2.38E-03	3.42E-04	3.13E-03
Distillate Oil	2.38E-10	1.10E-10	3.25E-09	4.83E-14	8.67E-16	1.92E-14
Aviation	6.32E-02	2.05E-02	3.67E-03	8.01E-03	3.87E-04	4.90E-03
Cement Manufactures	9.34E-07	6.53E-02	1.97E-06	3.02E-04	4.38E-06	1.52E-05
Process Heating	4.30E-01	1.17E-01	1.40E-03	2.13E-03	4.84E-05	5.07E-05
Coal	5.35E-03	1.47E-03	6.13E-03	8.79E-04	1.26E-04	1.16E-03
Steel Foundries	1.39E-04	7.42E-05	3.62E-05	9.41E-04	1.86E-04	4.40E-05
Paper and Pulp Products	2.68E-04	6.50E-04	7.01E-03	1.35E-04	3.51E-05	3.98E-05

Table S6a. Source contribution for PM2.5 (μg/m^3) for the MIDWEST

	MEMTN	NASTN	KANMO	TULOK	STLMO	INDIN	LOUKY	CLEOH	CINOH	DETMI
Gasoline	4.83E-01	7.55E-01	1.37E-01	1.04E-01	1.45E-03	1.90E-01	1.03E-01	3.79E-01	1.14E-01	2.20E-01
Diesel	2.49E+00	3.45E+00	2.20E+00	1.67E+00	1.87E-02	9.98E-01	6.95E-01	1.37E+00	4.91E-01	1.20E+00
Biomass	6.71E-01	1.13E+00	7.27E-01	5.52E-01	4.57E-03	4.49E-01	3.14E-01	4.68E-01	1.07E-01	6.32E-01
Food Cooking	1.23E+00	2.13E+00	8.62E-01	5.10E-01	3.66E-03	5.19E-01	2.16E-01	1.10E+00	2.56E-01	3.18E-01
Natural Gas	1.95E-01	4.93E-01	6.94E-02	5.27E-02	5.52E-04	1.04E-01	2.28E-02	8.54E-02	1.58E-02	4.66E-02
Other/Undefined	1.99E+00	1.47E+00	4.03E-01	6.56E-01	5.12E-03	5.17E-01	1.82E-01	8.28E-01	6.59E-01	9.20E-01
Distillate Oil	2.23E-01	7.83E-02	4.76E-02	3.61E-02	1.92E-04	4.29E-02	3.48E-02	1.02E-01	1.47E-02	1.11E+00
Aviation	3.29E-01	3.61E-01	3.14E-02	2.38E-02	4.47E-04	3.77E-02	3.21E-02	8.40E-02	1.62E-02	3.15E-01
Cement Manufactures	1.61E-03	3.83E-02	2.30E-02	1.75E-02	9.59E-05	6.08E-03	8.00E-01	7.01E-04	3.45E-03	4.94E-03
Process Heating	1.26E-02	8.20E-04	5.30E-04	4.02E-04	1.85E-04	3.44E-03	9.09E-04	8.74E-01	3.56E-03	1.72E-02
Coal	1.27E+00	9.41E-01	1.35E+00	1.02E+00	1.72E-02	1.27E+00	8.89E-01	1.14E+00	9.11E-01	5.17E-01
Steel Foundries	1.69E-04	1.84E-03	1.95E-02	1.48E-02	4.31E-05	2.04E-03	2.50E-03	5.54E-04	2.07E-03	1.74E-03
Paper and Pulp Products	1.49E-01	8.73E-02	7.54E-04	5.73E-04	1.65E-04	3.38E-03	1.32E-02	1.92E-03	3.71E-03	5.96E-03

Table S6b. Source contribution for PM0.1 (μg/m^3) for the MIDWEST

	MEMTN	NASTN	KANMO	TULOK	STLMO	INDIN	LOUKY	CLEOH	CINOH	DETMI
Gasoline	4.40E-02	8.37E-02	2.66E-02	5.57E-02	9.43E-05	9.44E-03	2.82E-03	5.52E-02	4.81E-03	2.08E-02
Diesel	6.53E-02	1.44E-01	1.58E-01	6.69E-02	2.13E-04	2.34E-02	4.56E-03	9.21E-02	5.74E-03	3.72E-02
Biomass	6.70E-02	6.51E-02	2.35E-02	2.62E-02	6.87E-05	6.29E-03	1.57E-03	1.63E-02	2.05E-03	2.03E-02
Food Cooking	3.40E-02	6.83E-02	3.46E-02	4.90E-02	2.08E-04	7.63E-03	1.67E-03	5.62E-02	3.44E-03	8.01E-03
Natural Gas	1.50E-01	3.74E-01	6.19E-02	6.47E-02	3.54E-04	7.69E-02	9.32E-03	1.31E-01	6.38E-03	3.53E-02
Other/Undefined	5.80E-03	4.36E-03	1.53E-03	2.62E-03	8.09E-06	5.35E-04	4.11E-04	2.53E-03	9.00E-04	1.63E-03
Distillate Oil	3.97E-12	5.49E-11	1.20E-11	9.81E-12	1.17E-14	4.55E-09	6.06E-15	5.34E-08	3.48E-09	4.23E-09
Aviation	1.07E-01	1.16E-01	1.47E-02	3.06E-02	1.23E-04	8.19E-03	5.72E-03	3.48E-02	2.20E-03	1.37E-01
Cement Manufactures	4.82E-06	1.98E-04	1.34E-04	1.60E-03	1.77E-07	9.16E-06	1.92E-03	3.61E-06	3.82E-06	1.37E-05
Process Heating	3.88E-03	9.50E-05	1.50E-04	7.39E-02	4.26E-05	3.04E-04	4.36E-05	3.52E-01	2.62E-04	3.45E-03
Coal	3.71E-03	2.78E-03	5.14E-03	3.21E-03	2.71E-05	1.31E-03	2.01E-03	3.50E-03	1.24E-03	9.16E-04
Steel Foundries	5.41E-06	5.17E-05	1.81E-03	9.08E-05	8.81E-07	3.48E-05	2.40E-05	2.90E-05	2.49E-05	4.09E-05

Paper and Pulp Products	4.00E-03	2.53E-03	2.28E-05	4.26E-05	1.02E-06	2.22E-05	1.02E-04	3.88E-05	2.15E-05	1.12E-04

Table S7a. Source contribution for PM2.5 (µg/m^3) for the WEST

	PHOAZ	ELPTX	SLCUT	DENCO	BAKCA	FRECA	LOSCA	SDOCA	SACCA	SFOCA	POROR
Gasoline	1.13E-01	6.43E-02	2.07E-01	3.69E-01	1.32E-02	9.04E-02	1.01E+00	2.11E-01	1.18E-01	1.60E-01	1.72E-01
Diesel	5.16E-01	4.32E-01	7.05E-01	1.16E+00	9.36E-02	4.52E-01	2.39E+00	4.75E-01	3.33E-01	3.38E-01	7.44E-01
Biomass	2.27E-02	1.51E-02	1.64E-01	1.76E-01	1.70E-02	2.36E-01	7.09E-01	2.50E-01	1.22E-01	9.34E-02	2.24E-01
Food Cooking	6.33E-01	6.27E-01	5.91E-01	1.11E+00	2.92E-02	1.07E+00	2.36E+00	1.99E+00	7.72E-01	2.30E-01	9.69E-02
Natural Gas	2.35E-02	1.56E-02	1.26E-01	2.17E-03	4.25E-02	5.81E-02	4.77E-01	9.49E-02	8.04E-02	5.71E-02	4.71E-03
Other/Undefined	4.37E-01	3.43E-01	2.56E-01	4.68E-01	1.12E-01	6.40E-01	2.89E+00	1.50E+00	7.19E-01	9.67E-01	6.51E-01
Distillate Oil	4.05E-03	2.70E-03	1.07E-01	5.14E-04	9.14E-03	6.24E-03	7.34E-02	1.50E-02	4.58E-03	7.08E-03	2.38E-02
Aviation	2.65E-02	1.77E-02	6.69E-02	6.24E-04	1.07E-02	4.75E-02	4.29E-01	1.44E-01	7.00E-02	6.16E-02	4.13E-02
Cement Manufactures	6.83E-04	4.55E-04	3.58E-03	1.14E-04	5.38E-02	1.25E-03	2.94E-02	1.88E-02	5.82E-04	7.79E-03	7.43E-05
Process Heating	6.19E-02	4.13E-02	8.35E-02	2.11E-04	2.33E-03	2.83E-02	9.31E-02	1.15E-02	6.21E-02	2.92E-02	1.86E-05
Coal	2.68E-01	1.27E-01	5.69E-01	5.73E-01	4.46E-07	2.33E-06	2.71E-06	1.81E-06	1.56E-06	2.44E-06	2.01E-02
Steel Foundries	1.28E-03	8.54E-04	1.77E-06	7.14E-08	4.30E-05	9.43E-04	3.91E-03	1.59E-04	1.19E-03	9.04E-04	3.89E-02
Paper and Pulp Products	2.98E-04	1.99E-04	1.36E-02	3.74E-05	1.45E-03	2.26E-02	1.16E-02	2.33E-03	2.01E-02	8.20E-03	7.05E-03

Table S7b. Source contribution for PM2.5 (µg/m^3) for the WEST

	PHOAZ	ELPTX	SLCUT	DENCO	BAKCA	FRECA	LOSCA	SDOCA	SACCA	SFOCA	POROR
Gasoline	7.06E-03	7.06E-03	3.42E-02	7.08E-02	6.81E-04	9.56E-03	8.45E-03	4.56E-02	1.66E-02	2.53E-02	4.67E-02
Diesel	1.57E-02	1.57E-02	5.15E-02	9.87E-02	1.41E-03	1.51E-02	5.44E-03	2.97E-02	1.26E-02	1.50E-02	9.33E-02
Biomass	3.22E-04	3.22E-04	2.21E-02	2.16E-02	3.12E-04	9.83E-03	3.13E-03	2.30E-02	4.40E-03	5.86E-03	2.03E-02
Food Cooking	1.68E-02	2.01E-02	4.61E-02	7.53E-02	3.00E-04	2.98E-02	4.48E-03	9.87E-02	1.95E-02	7.94E-03	4.07E-02
Natural Gas	1.45E-02	1.45E-02	1.28E-01	1.94E-03	4.09E-02	5.07E-02	3.06E-02	9.00E-02	9.97E-02	4.73E-02	4.51E-02
Other/Undefined	5.99E-04	6.07E-04	1.45E-03	2.64E-03	3.83E-05	6.18E-04	3.23E-04	3.34E-03	8.62E-04	1.30E-03	2.79E-03
Distillate Oil	6.88E-13	6.88E-13	9.31E-09	2.33E-12	1.92E-09	4.55E-08	3.28E-08	9.26E-07	4.54E-10	2.43E-08	4.98E-11
Aviation	7.77E-03	7.77E-03	4.86E-02	2.54E-04	3.16E-03	1.67E-02	3.39E-02	6.33E-02	3.17E-02	2.34E-02	2.46E-02
Cement Manufactures	7.53E-07	7.53E-07	2.60E-05	7.74E-07	7.07E-05	3.26E-06	7.62E-05	1.13E-04	2.34E-06	4.04E-05	8.42E-07
Process Heating	1.40E-03	1.52E-02	4.83E-02	5.43E-05	4.45E-04	7.19E-03	9.31E-04	3.14E-03	1.02E-02	6.94E-03	6.33E-06
Coal	2.33E-04	2.25E-04	3.23E-03	3.23E-03	5.44E-07	9.90E-13	3.16E-13	5.86E-12	1.84E-14	1.32E-12	8.64E-05
Steel Foundries	4.13E-05	4.13E-05	1.23E-07	5.61E-09	9.13E-07	4.12E-05	3.83E-06	1.04E-05	3.40E-05	4.58E-05	5.48E-03
Paper and Pulp Products	4.98E-06	4.98E-06	7.40E-04	1.06E-06	9.96E-06	3.53E-04	4.31E-05	4.66E-05	6.07E-04	9.48E-05	2.89E-04