



Supplement of

Modeling the high-mercury wet deposition in the southeastern US with WRF-GC-Hg v1.0

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Support Information

Table S1. Detailed Hg Deposition Network (MDN) sites information

Site id	Site Name	County	State	Latitude	Longitude	Elevation
AL19	Birmingham	Jefferson	AL	33.553	-86.8148	200
FL05	Chassahowitzka National Wildlife Refuge	Citrus	FL	28.7486	-82.5551	3
FL11	Everglades National Park-Research Center	Dade	FL	25.39	-80.68	2
FL34	Everglades Nutrient Removal Project	Palm Beach	FL	26.6556	-80.3972	10
FL96	Pensacola	Escambia	FL	30.5499	-87.375	45
FL97	Everglades-Western Broward County	Broward	FL	26.1714	-80.8222	4
GA09	Okefenokee National Wildlife Refuge	Charlton	GA	30.7404	-82.1283	45
GA33	Sapelo Island	McIntosh	GA	31.3961	-81.2811	3
GA40	Yorkville	Paulding	GA	33.9282	-85.0451	395
IL11	Bondville	Champaign	IL	40.0528	-88.3719	212
KS03	Reserve	Brown	KS	39.9792	-95.5681	265
KS05	Coffey County Lake	Coffey	KS	38.1992	-95.6646	337
KS24	Glen Elder State Park	Mitchell	KS	39.5136	-98.3403	456
KS32	Lake Scott State Park	Scott	KS	38.6717	-100.916	863
KS99	Cimarron National Grassland	Morton	KS	37.1336	-101.825	1021
KY10	Mammoth Cave National Park-Houchin Meadow	Edmonson	KY	37.1317	-86.148	236
MD00	Smithsonian Environmental Research Center	Anne Arundel	MD	38.889	-76.5558	20
MD08	Piney Reservoir	Garrett	MD	39.7053	-79.0122	769
MD99	Beltsville	Prince Georges	MD	39.028	-76.8171	46
MN27	Lamberton	Redwood	MN	44.237	-95.3011	367
MO03	Ashland Wildlife Area	Boone	MO	38.754	-92.1994	257
MO46	Mingo National Wildlife Refuge	Stoddard	MO	36.9716	-90.1433	105

MS22	Oak Grove	Perry	MS	30.9849	-88.9321	100
NC42	Pettigrew State Park	Washington	NC	35.7373	-76.5149	2
NE15	Mead	Saunders	NE	41.1528	-96.4912	352
NJ30	New Brunswick	Middlesex	NJ	40.4728	-74.4226	21
NY06	Bronx	Bronx	NY	40.868	-73.8782	68
NY20	Huntington Wildlife	Essex	NY	43.9731	-74.2231	500
NY68	Biscuit Brook	Ulster	NY	41.9936	-74.5031	634
OK01	McGee Creek	Atoka	OK	34.3154	-95.8893	195
OK22	Miami	Ottawa	OK	36.895	-94.758	258
OK31	Copan	Washington	OK	36.9081	-95.8823	255
ON07	Egbert		ON	44.2339	-79.7917	196
PA13	Allegheny Portage Railroad National Historic Site	Cambria	PA	40.457	-78.56	739
PA21	Goddard State Park	Crawford	PA	41.4271	-80.1451	385
PA29	Kane Experimental Forest	Elk	PA	41.5978	-78.7675	618
PA30	Erie	Erie	PA	42.1558	-80.1134	177
PA37	Waynesburg	Greene	PA	39.8161	-80.285	452
PA42	Leading Ridge	Huntingdon	PA	40.6575	-77.9397	287
PA47	Millersville	Lancaster	PA	39.9909	-76.3856	84
PA52	Little Pine State Park	Lycoming	PA	41.3639	-77.3561	228
PA60	Valley Forge	Montgomery	PA	40.1166	-75.8833	46
PA72	Milford	Pike	PA	41.3273	-74.8199	212
PA90	Hills Creek State Park	Tioga	PA	41.8043	-77.1903	476
SC03	Savannah River	Barnwell	SC	33.245	-81.6505	90
SC05	Cape Romain National Wildlife Refuge	Charleston	SC	32.943	-79.6592	1
SC19	Congaree Swamp	Richland	SC	33.8145	-80.7809	34
TN11	Great Smoky Mountains National Park-Elkmont	Sevier	TN	35.6645	-83.5903	640

VA28	Shenandoah National Park-Big Meadows	Madison	VA	38.5231	-78.4348	1072
VT99	Underhill	Chittenden	VT	44.5283	-72.8684	399
WI09	Popple River	Florence	WI	45.7964	-88.3994	421
WI10	Potawatomi	Forest	WI	45.5648	-88.8083	570
WI22	Milwaukee	Milwaukee	WI	43.0752	-87.8843	206
WI31	Devil's Lake	Sauk	WI	43.4352	-89.6801	389
WI99	Lake Geneva	Walworth	WI	42.5792	-88.5006	288

Table S2. Atmospheric Mercury Network (AMNet) sites information

Site ID	Site Name	State	Latitude	Longitude
AL19	Birmingham	AL	33.553	-86.8148
FL96	Pensacola	FL	30.5499	-87.375
GA40	Yorkville	GA	33.9282	-85.0451
MD08	Piney Reservoir	MD	39.7053	-79.0122
MD99	Beltsville	MD	39.0280	-76.8171
OH52	South Bass Island	OH	41.6582	-82.8270
OK99	Stilwell	OK	35.7508	-94.67
WI07	Horicon Marsh	WI	43.4660	-88.6210

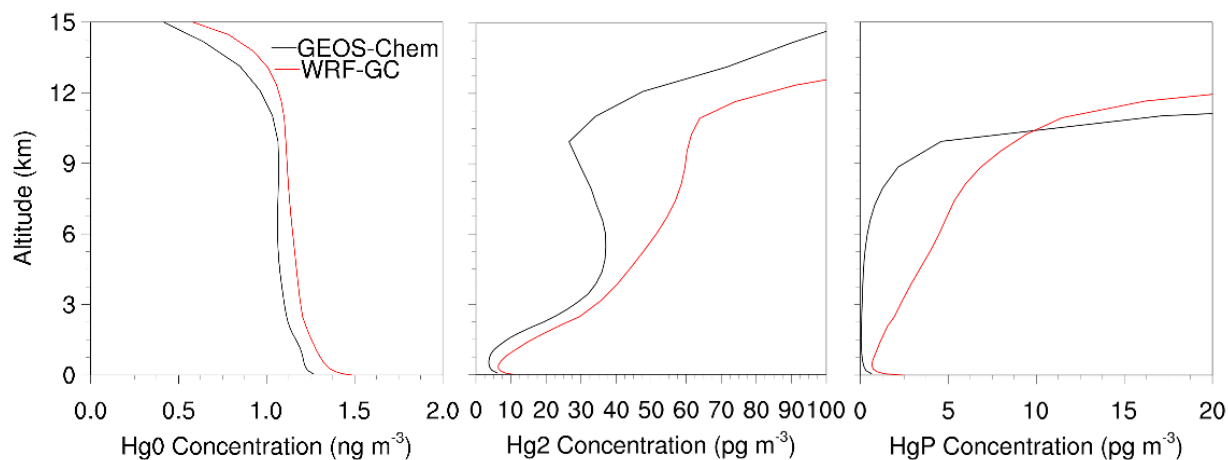


Fig. S1 Average vertical profile of Hg⁰, Hg², HgP concentration, simulated by WRF-GC in 25 km × 25 km resolution from July to September 2013.

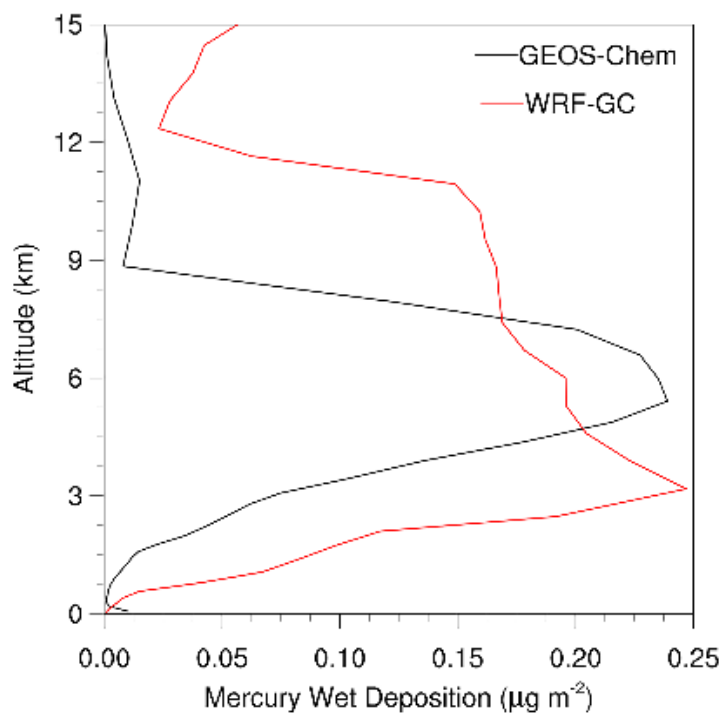


Fig. S2 Average vertical profile of Hg wet deposition, simulated by WRF-GC in 25 km × 25 km resolution from July to September 2013.

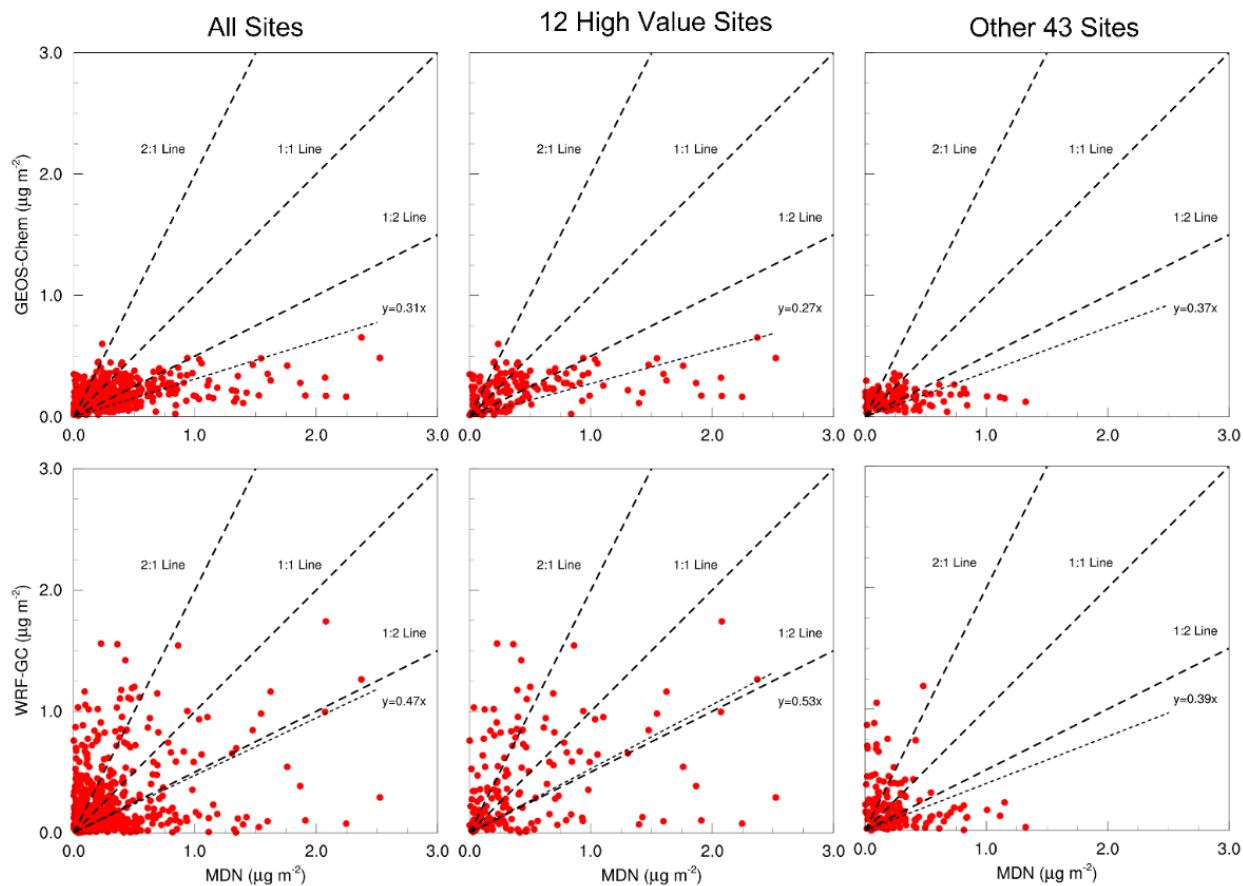


Fig. S3 Correlation of MDN data with WRF-GC $25 \text{ km} \times 25 \text{ km}$ and GEOS-Chem $4^\circ \times 5^\circ$ simulation results. Each dot represents a weekly observation data at a specific MDN site, the top panel shows the GEOS-Chem $4^\circ \times 5^\circ$ simulation results, and the right panel shows WRF-GC $25 \text{ km} \times 25 \text{ km}$ simulation results corresponding to same observation period. From left to right corresponding to all sites, 12 high value sites, other 43 sites.

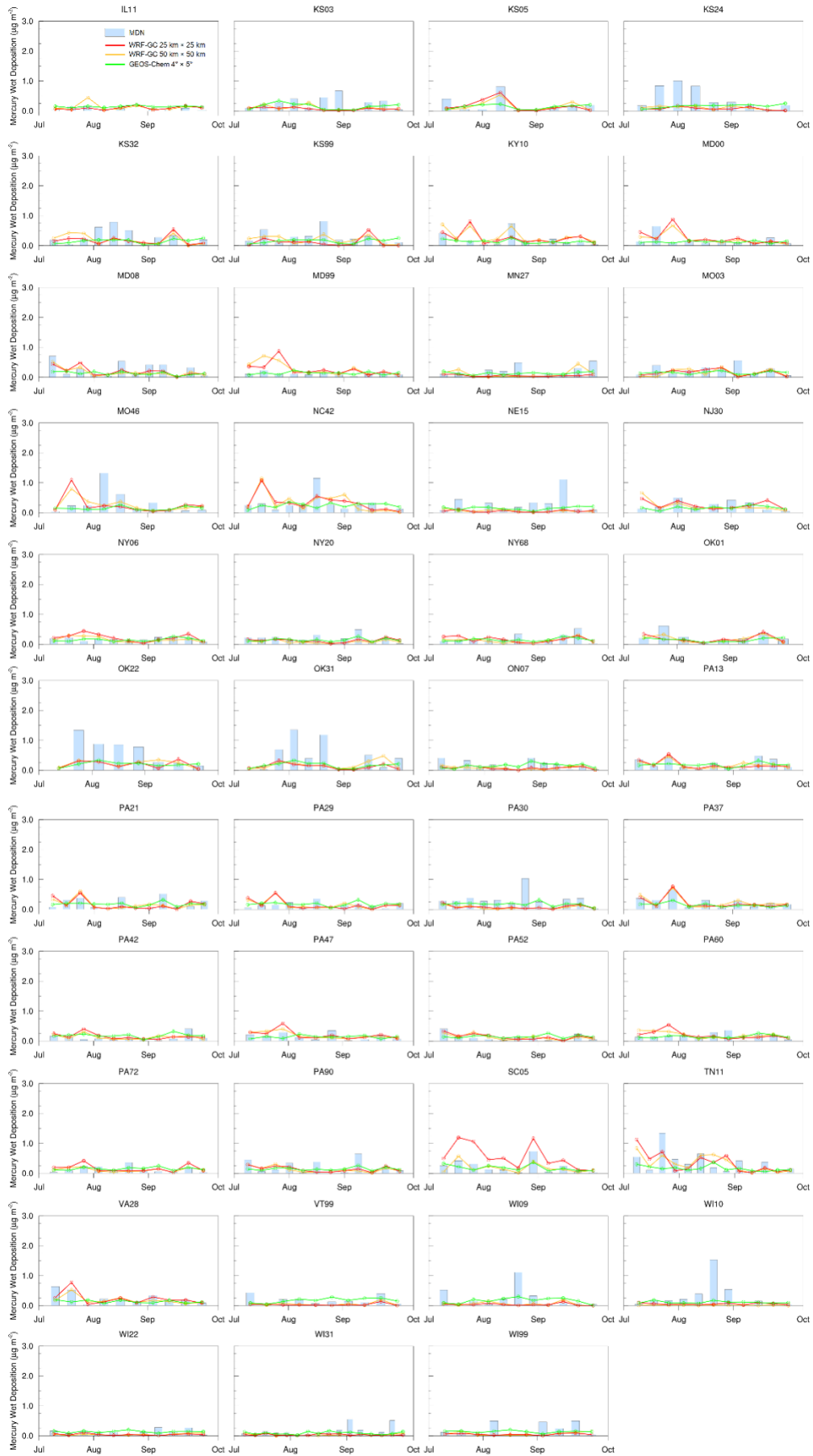


Fig. S4 Detailed time series plot of comparison of MDN observation, GEOS-Chem $4^\circ \times 5^\circ$ and WRF-GC $50 \text{ km} \times 50 \text{ km}$, WRF-GC $25 \text{ km} \times 25 \text{ km}$ simulation results