

Supporting Information for the manuscript entitled:

Uncertainties in the observation and simulation of global speciated atmospheric mercury deposition to terrestrial surfaces

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Table S1: Hg wet deposition distribution along different land use type (B: Barren; C/N: Cropland/Natural Vegetation mosaics; C: Croplands; DB: Deciduous Broadleaf Forests; DN: Deciduous Needleleaf Forests; EB: Evergreen Broadleaf Forests; EN: Evergreen Needleleaf Forests; MIX: Mixed Forests; G: Grasslands; PW: Permenant Wetlands; S: Savannas; WS: Woody Savannas; OS: Open Shrublands; Urban and Built-up Lands; W: Water.)

Site Name	Network	LUC	Latitude	Longitude	Period	Conc. (ng/L)	Prec. (mm)	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)	References
Craters of the MNM	MDN	B	43.46	-113.56	2008-2015	12.39	434.2	5.1	
Patricia McInnes		B	56.75	-111.48	2011	11.2	98	1.1	Lynam et al., 2017
Ny-Ålesund	GMOS	B	78.90	11.88	2012–2015	5.9	232.3	1.1	Sprovieri et al., 2017
Dixon Springs A.C.	MDN	C/N	37.44	-88.67	2008-2015	9.84	1285.2	12.3	
Ann Arbor	MDN	C/N	42.42	-83.90	2008-2015	12.4	864.9	10.6	
Millersville	MDN	C/N	39.99	-76.39	2008-2015	7.4	1131.3	8.3	
Longview	MDN	C/N	32.38	-94.71	2008-2015	9.6	1189.1	11.2	
Harcum	MDN	C/N	37.53	-76.49	2008-2015	7.1	1243.2	8.8	
Lake Geneva	MDN	C/N	42.58	-88.50	2008-2015	10.8	965.2	10.3	
Puding		C/N	26.37	105.80	2005/05-2006/07	20.6	1203	24.8	Guo et al., 2008
Hongjiadu		C/N	26.88	105.85	2005/05-2006/08	39.4	881	34.7	Guo et al., 2008
Dongfeng		C/N	26.85	106.13	2005/05-2006/10	37.4	970	36.3	Guo et al., 2008
Waldhof	EMEP	C/N	52.80	10.75	2009		638	2.9	Bieser et al., 2014
Yarner Wood	EMEP	C/N	50.59	-3.70	2009		1296	3.3	Bieser et al., 2014
Genesee	MDN	C	53.30	-114.20	2008-2015	11.2	390.4	4.2	
Deer Flats	MDN	C	43.55	-116.64	2008-2015	10.56	215.3	2.3	
Bondville	MDN	C	40.05	-88.37	2008-2015	11.43	917.8	10.5	
Clifty Falls State Park	MDN	C	38.76	-85.42	2008-2015	10.23	1387	14.1	
Southwest Purdue A.C.	MDN	C	38.74	-87.49	2008-2015	8.8	1216.6	10.7	
Reserve	MDN	C	39.98	-95.57	2008-2015	14.4	825	11.8	
West Mineral	MDN	C	37.27	-94.94	2008-2015	12.2	1097.9	13.2	
Coffey County Lake	MDN	C	38.20	-95.66	2008-2015	12.7	955.9	11.9	
Glen Elder State Park	MDN	C	39.51	-98.34	2008-2015	16.6	610.5	10.0	

Site Name	Network	LUC	Latitude	Longitude	Period	Conc. (ng/L)	Prec. (mm)	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)	References
Chase	MDN	C	32.10	-91.71	2008-2015	7.2	1726.1	12.4	
Alexandria	MDN	C	31.17	-92.40	2008-2015	9.4	1225.5	11.4	
Caribou	MDN	C	46.87	-68.01	2008-2015	5.8	1092.6	7.0	
Kellogg	MDN	C	42.41	-85.39	2008-2015	8.5	1048	8.9	
Lamberton	MDN	C	44.24	-95.30	2008-2015	12.6	661.4	8.3	
Lostwood	MDN	C	48.64	-102.40	2008-2015	11.4	333.5	3.8	
Mead	MDN	C	41.15	-96.49	2008-2015	15.2	809.3	12.0	
Miami	MDN	C	36.90	-94.76	2008-2015	11.9	1189.2	14.2	
Egbert	MDN	C	44.23	-79.79	2008-2015	8.0	755.7	6.2	
Arendtsville	MDN	C	39.92	-77.31	2008-2015	7.2	1144.8	8.3	
Valley Forge	MDN	C	40.12	-75.88	2008-2015	7.0	1214.1	8.4	
Eagle Butte	MDN	C	44.99	-101.24	2008-2015	14.1	498.1	6.8	
Bratt's Lake BSRN	MDN	C	50.20	-104.71	2008-2015	8.2	405	3.3	
Horicon Marsh	MDN	C	43.47	-88.62	2008-2015	9.8	917.5	9.0	
Three Gorges		C	29.90	107.50	2012/12–2013/10	18	722	13.0	Zhao et al., 2015
Yucheng		C	36.95	116.60	2012-2013		528	8.8	Sommar et al., 2016
Seine Bay		C	49.40	0.50	2010/10-1012/03		802.3	9.0	Connan et al., 2013
Zingst	EMEP	C	54.43	12.73	2009		561	3.4	Bieser et al., 2014
Heigham Holmes	EMEP	C	52.72	-1.62	2009		462	2.2	Bieser et al., 2014
Auchencorth Moss	EMEP	C	55.78	3.23	2009		679	3.4	Bieser et al., 2014
Banchory	EMEP	C	57.07	-2.53	2009		777	3.8	Bieser et al., 2014
Kollumerwaard	EMEP	C	52.30	4.50	2009		719	2.8	Bieser et al., 2014

Site Name	Network	LUC	Latitude	Longitude	Period	Conc. (ng/L)	Prec. (mm)	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)	References
Mammoth Cave	MDN	DB	37.13	-86.15	2008-2015	8.1	1362.4	9.5	
Piney Reservoir	MDN	DB	39.71	-79.01	2008-2015	7.0	1036.7	7.3	
Carrabassett Valley	MDN	DB	45.08	-70.21	2008-2015	6.7	1291.9	8.6	
Greenville Station	MDN	DB	45.49	-69.66	2008-2015	5.3	1301	6.9	
Douglas Lake	MDN	DB	45.56	-84.68	2008-2015	6.9	943.23	6.6	
Marcell	MDN	DB	47.53	-93.47	2008-2015	9.1	751.3	17.7	
Ashland	MDN	DB	38.75	-92.20	2008-2015	10.9	1044.5	11.2	
Mingo	MDN	DB	36.97	-90.14	2008-2015	10.0	1443.2	14.2	
Huntington Wildlife	MDN	DB	43.97	-74.22	2008-2015	5.1	1136.8	5.8	
Biscuit Brook	MDN	DB	41.99	-74.50	2008-2015	5.5	1565.3	8.7	
Allegheny	MDN	DB	40.46	-78.56	2008-2015	8.1	1096.3	8.8	
Young Woman's Creek	MDN	DB	41.41	-77.68	2008-2015	7.9	1020.8	8.0	
Goddard State Park	MDN	DB	41.43	-80.15	2008-2015	8.9	1095.5	9.7	
Kane Experimental Forest	MDN	DB	41.60	-78.77	2008-2015	7.2	1205.9	8.6	
Leading Ridge	MDN	DB	40.66	-77.94	2008-2015	7.7	1015.9	7.8	
Little Pine State Park	MDN	DB	41.36	-77.36	2008-2015	7.6	970.6	7.4	
Milford	MDN	DB	41.33	-74.82	2008-2015	6.9	1255.6	8.7	
Congaree Swamp	MDN	DB	33.81	-80.78	2008-2015	9.0	1217.5	10.9	
Great Smoky Mountains	MDN	DB	35.66	-83.59	2008-2015	9.6	1547.4	13.3	
Shenandoah	MDN	DB	38.52	-78.43	2008-2015	5.9	1493.4	8.6	
Underhill	MDN	DB	44.53	-72.87	2008-2015	5.3	1354.6	7.2	
Brule River	MDN	DB	46.75	-91.61	2008-2015	9.0	812.9	7.4	
Potawatomi	MDN	DB	45.56	-88.81	2008-2015	8.3	865.5	7.3	

Site Name	Network	LUC	Latitude	Longitude	Period	Conc. (ng/L)	Prec. (mm)	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)	References
Devil's Lake	MDN	DB	43.44	-89.68	2008-2015	10.1	1058.5	10.5	
Trout Lake	MDN	DB	46.05	-89.65	2008-2015	9.4	829.1	7.7	
Canaan Valley Institute	MDN	DB	39.12	-79.45	2008-2015	7.0	1307.3	9.1	
Mt. Damei		DB	29.63	121.57	2012/08-2014/08	3.7	1622	6.0	Fu et al., 2016a
Han River		DB	37.53	127.30	2008/02-2010/02	12.6	1085.9	4.3	Han et al., 2016
Tieshanping		DN	29.62	106.69	2005/03-2006/03	32.3	898	29.0	Wang et al., 2009
Oak Grove	MDN	EB	30.98	-88.93	2008-2015	9.9	1705	16.0	
Mt. Ailao	GMOS	EB	24.54	101.03	2011–2014	4.5	896.7	3.3	Sprovieri et al., 2017
Xiaoping,Xiamen		EB	24.85	118.04	2012/06-2013/05	11.3	1271	14.4	Xu et al., 2014
Bantou,Xiamen		EB	24.67	118.03	2012/06-2013/05	14	1252	17.6	Xu et al., 2014
Chongqing		EB	29.83	106.38	2008-2015	34.25	1104	37.8	Qin et al., 2016
Saturna Island	MDN	EN	48.78	-123.13	2008-2015	6.2	820.31	5.1	
Sequoia	MDN	EN	36.57	-118.78	2008-2015	7.173	842.3	5.5	
H. J. Andrews	MDN	EN	44.21	-122.26	2008-2015	3.8	2436.6	9.2	
Chapais	MDN	EN	49.82	-74.98	2008-2015	5.3	1064.1	5.6	
Makah	MDN	EN	48.29	-124.65	2008-2015	3.6	1888.7	6.9	
Mt. Gongga		EN	29.65	102.12	2006	9.9	919	9.1	Fu et al., 2008
Mt. Gongga		EN	29.58	101.93	2005/05-2006/4	14.3	1825	26.1	Fu et al., 2010a
SET station		EN	29.77	94.73	2010/05-2012/10	4	975	3.9	Huang et al., 2015
Qianyanzhou		EN	26.75	115.07	2013/12-2014/11	12.5	1472	18.4	Cheng et al., 2017
Huitong		EN	26.83	109.75	2013/12-2014/11	22.2	703	15.6	Cheng et al., 2017
Schmücke	EMEP	EN	50.65	10.77	2009		1310	3.1	Bieser et al., 2014
Iskbra	GMOS	EN	45.56	14.86	2011–2015	5.6	1203.4	6.7	Sprovieri et al., 2017

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Bariloche	GMOS	EN	-41.43	-71.42	2014–2015	0.5	549.5	0.3	Sprovieri et al., 2017
North Atlantic Coastal Lab	MDN	MIX	41.98	-70.02	2008-2015	4.6	1204.6	5.5	
Bridgton	MDN	MIX	44.11	-70.73	2008-2015	5.7	1257.3	7.2	
Acadia	MDN	MIX	44.38	-68.26	2008-2015	4.8	1509.1	7.2	
Fernberg	MDN	MIX	47.95	-91.50	2008-2015	8.3	726	5.7	
Waccamaw	MDN	MIX	34.26	-78.48	2008-2015	7.4	1347.7	9.8	
Candor	MDN	MIX	35.26	-79.84	2008-2015	6.2	1203.4	7.4	
Pettigrew State Park	MDN	MIX	35.74	-76.51	2008-2015	7.2	1309.4	9.3	
Kejimkujik National Park	MDN	MIX	44.43	-65.21	2008-2015	4.6	1569.1	7.1	
Mt. Changbai	GMOS	MIX	42.40	128.11	2011–2014	28.3	327.9	2.5	Sprovieri et al., 2017
Mt. Leigong		MIX	26.39	108.20	2008/05-2009/05	4	1525	6.1	Fu et al., 2016a
Mt. Simian, Chongqing		MIX	28.62	106.40	2012/03-2013/02	10.94	1412.2	15.45	Ma et al., 2016
Deokjeok		MIX	37.23	126.12	2007-2008	12.4	476.3	6.9	Nguyen et al., 2016
Chuncheon		MIX	37.95	127.81	2007	11.425	1090	12.5	Ahn et al., 2011
Schauinsland	EMEP	MIX	47.90	7.90	2009		1382	5.1	Bieser et al., 2014
Birkenes	EMEP	MIX	58.38	8.25	2009		1790	3.8	Bieser et al., 2014
Vavihill	EMEP	MIX	56.02	13.15	2009		605	3.6	Bieser et al., 2014
Longobucco	GMOS	MIX	39.39	16.61	2012–2013	5.3	282.1	1.7	Sprovieri et al., 2017
Henry Kroeger	MDN	G	51.42	-110.83	2008-2015	10.8	298.2	3.2	
Kodiak	MDN	G	57.72	-152.56	2008-2015	2.1	2371.6	4.8	
Sycamore Canyon	MDN	G	35.14	-111.97	2008-2015	24.5	353.99	7.7	
Converse Flats	MDN	G	34.19	-116.91	2008-2015	9.2	492.3	4.4	
Buffalo Pass - Summit Lake	MDN	G	40.54	-106.68	2008-2015	8.68	1050.4	9.2	

Site Name	Network	LUC	Latitude	Longitude	Period	Conc. (ng/L)	Prec. (mm)	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)	References
Mesa	MDN	G	37.20	-108.49	2008-2015	23.01	438	9.4	
Everglades N.P.R.C	MDN	G	25.39	-80.68	2008-2015	13.35	1435.8	19.0	
McCall	MDN	G	44.89	-116.10	2008-2015	8.09	651.8	5.3	
Lake Scott State Park	MDN	G	38.67	-100.92	2008-2015	15.9	520.9	8.1	
Cimarron	MDN	G	37.13	-101.82	2008-2015	17.1	354.6	6.1	
Badger Peak	MDN	G	45.63	-106.55	2008-2015	13.2	400.3	5.3	
Santee	MDN	G	42.83	-97.85	2008-2015	13.7	595.4	8.1	
Lesperance Ranch	MDN	G	41.50	-117.50	2008-2015	34.0	165	2.7	
Gibb's Ranch	MDN	G	41.57	-115.21	2008-2015	16.8	238	3.7	
Lake Murray	MDN	G	34.10	-97.07	2008-2015	11.0	1024.3	10.7	
Wichita Mountains NWR	MDN	G	34.73	-98.71	2008-2015	12.4	753.2	9.2	
Copan	MDN	G	36.91	-95.88	2008-2015	11.7	1075.5	12.4	
Yellowstone	MDN	G	44.92	-110.42	2008-2015	12.1	442.8	5.4	
Mt. Waliguan	GMOS	G	36.29	100.90	2012–2014	5.3	94.8	1.0	Sprovieri et al., 2017
Bayinbuluk		G	42.90	83.72	2013/12-2014/12	7.7	260	2.0	Fu et al., 2016a
Nam Co		G	30.78	90.99	2009-2011	4.8	365	1.8	Huang et al., 2012b
Col Margherita	GMOS	G	46.37	11.79	2014	7.8	559.5	4.4	Sprovieri et al., 2017
Hell's Gate National Park		G	-0.89	36.31	2009/4-2010/5	24.29	691	16.8	Wetang'ula, 2011
Glennies Creek		G	-32.45	151.10	2006/06-2007/12	7.1	4102	29.1	Dutt et al., 2009
Everglades N.R.P.	MDN	PW	26.66	-80.40		13.6	1472.3	20.0	
Celestún	GMOS	PW	20.86	-90.38	2012–2013	8.1	297.1	2.4	Sprovieri et al., 2017
Bettles	MDN	S	66.91	-151.68	2008-2015	7.6	342.135	2.5	
Pensacola	MDN	S	30.55	-87.38	2008-2015	9.85	1830.6	17.8	

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Western Broward County	MDN	S	26.17	-80.82	2008-2015	14.17	1292.9	18.2	
Indiana Dunes	MDN	S	41.63	-87.09	2008-2015	10.3	1068.6	10.5	
Stilwell	MDN	S	35.75	-94.67	2008-2015	10.5	1256.8	12.8	
Yinzidu		S	26.57	106.12	2005/05-2006/09	35.7	1068	38.1	Guo et al., 2008
Wujiangdu		S	27.32	106.77	2005/05-2006/11	57.1	693	39.6	Guo et al., 2008
Amsterdam Island	GMOS	S	-37.80	77.55	2013–2014	2.1	848.7	1.8	Sprovieri et al., 2017
Delta Elementary	MDN	WS	30.79	-87.85	2008-2015	8.93	1891.66	16.9	
Centreville	MDN	WS	32.90	-87.25	2008-2015	9.1	1522.3	12.3	
Bay Road	MDN	WS	30.47	-88.14	2008-2015	8.9	1949.98	17.4	
Molas Pass	MDN	WS	37.75	-107.69	2008-2015	14.0142	884.21	12.8	
Okefenokee	MDN	WS	30.74	-82.13	2008-2015	9.85	1298.8	12.7	
Yorkville	MDN	WS	33.93	-85.05	2008-2015	8.95	1362.8	12.1	
Hammond	MDN	WS	30.50	-90.38	2008-2015	10.1	1586.5	16.0	
Smithsonian	MDN	WS	38.89	-76.56	2008-2015	6.9	1024.1	7.0	
Seney	MDN	WS	46.29	-85.95	2008-2015	8.4	790.8	6.6	
Leech Lake	MDN	WS	47.16	-94.15	2008-2015	7.4	566.2	4.3	
Camp Ripley	MDN	WS	46.25	-94.50	2008-2015	9.6	792.2	7.8	
Grand Bay NERR	MDN	WS	30.43	-88.43	2008-2015	10.3	1704.6	17.3	
Glacier National Park-Fire W.S.	MDN	WS	48.51	-114.00	2008-2015	6.4	889	5.8	
Stephenville	MDN	WS	48.56	-58.57	2008-2015	5.2	1258.1	6.5	
Athens Super Site	MDN	WS	39.31	-82.12	2008-2015	8.2	1026.6	8.3	
McGee Creek	MDN	WS	34.32	-95.89	2008-2015	10.7	1152.9	12.1	
Waynesburg	MDN	WS	39.82	-80.29	2008-2015	10.1	953.4	9.4	

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Hills Creek State Park	MDN	WS	41.80	-77.19	2008-2015	7.2	870.4	6.2	
Savannah River	MDN	WS	33.25	-81.65	2008-2015	9.3	1216	11.3	
Bredkålen	EMEP	WS	63.85	15.33	2009		412	1.3	Bieser et al., 2014
Pallas	GMOS	WS	68.00	24.24	2011–2014	6.1	340.8	2.1	Sprovieri et al., 2017
HD01		WS	21.16	-98.37	2003/9-2005/12	8.2	1149	9.4	Hansen and Gay, 2013
Caballo	MDN	OS	33.06	-107.29	2008-2015	14.2	372.9	5.3	
Birmingham	MDN	U	33.55	-86.81	2008-2015	13.2	1474.3	19.5	
Fort Collins	MDN	U	40.59	-105.14	2008-2015	11.594	508	5.9	
Chassahowitzka	MDN	U	28.75	-82.56	2008-2015	11.67	1382.8	14.7	
Lake Charles	MDN	U	30.17	-93.17	2008-2015	9.5	1785.9	17.0	
Beltsville	MDN	U	39.03	-76.82	2008-2015	7.1	1197.8	6.9	
Blaine	MDN	U	45.14	-93.22	2008-2015	11.5	782.4	9.0	
University Research Farm	MDN	U	36.07	-79.73	2008-2015	6.3	1194	7.5	
New Brunswick	MDN	U	40.47	-74.42	2008-2015	6.6	1134.4	7.4	
Bronx	MDN	U	40.87	-73.88	2008-2015	6.9	1217.8	8.4	
Rochester	MDN	U	43.15	-77.55	2008-2015	7.6	961.6	7.2	
Beaverton	MDN	U	45.47	-122.82	2008-2015	4.9	1151.4	5.6	
Salt Lake City	MDN	U	40.71	-111.96	2008-2015	18.6	372.7	6.9	
Seattle/NOAA	MDN	U	47.68	-122.26	2008-2015	8.1	930.5	6.9	
Milwaukee	MDN	U	43.08	-87.88	2008-2015	9.9	938.1	9.3	
Toronto		U	43.67	-79.40	2005/06-2008/03	15.3	1425	21.8	Zhang et al., 2012
Nanjing		U	32.05	118.78	2011/06-2012/02	52.9	1068	56.5	Zhu et al., 2014
Guiyang		U	26.57	106.72	2012/09-2013/08	11	1145	12.6	Fu et al., 2016a

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Lhasa		U	29.63	91.01	2010	24.8	331	8.2	Huang et al., 2013
Qingdao		U	36.16	120.34	2016/03-2017/2	13.6	419	5.7	Chen et al., 2018
Hongwen,Xiamen		U	24.48	118.16	2012/06-2013/05	12.5	1024	12.8	Xu et al., 2014
Gulangyu,Xiamen		U	24.45	118.07	2012/06-2013/05	11.4	1001	11.4	Xu et al., 2014
Ningbo		U	29.86	121.55	2007-2008	17.1	1488.2	25.8	Nguyen et al., 2016
Weinan,Shanxi		U	34.48	109.48	2014/12-2015/12	7.4	246	1.8	Lu and Liu, 2018
Seoul		U	37.51	127.00		13.38	1300	17.4	Seo et al., 2012
Minamata Bay		U	32.21	130.41	2009/09-2010/08	5.9	2322	13.7	Marumoto and Matsuyama, 2014
Poznań city		U	52.42	16.94	2013/4-2014/10	6.96	377	2.6	Siudek et al., 2016
Pretoria		U	-25.73	28.27	2007-2010	15.8	1287	20.3	Gichuki and Manson, 2013
North Ryde		U	-33.77	151.12	2006/06-2007/13	4.4	4139	18.2	Dutt et al., 2009
Nome	MDN	W	64.51	-165.40	2008-2015	6.2	379.97	2.3	
Yurok Tribe-Requa	MDN	W	41.56	-124.09	2008-2015	4.4	1643.78	7.0	
Sapelo Island	MDN	W	31.40	-81.28	2008-2015	8.9	1089.55	9.7	
Casco Bay-Wolfes Neck Farm	MDN	W	43.83	-70.06	2008-2015	5.1	1282.6	6.5	
Cedar Beach-Southold	MDN	W	41.03	-72.39	2008-2015	4.9	982.7	4.8	
South Bass Island	MDN	W	41.66	-82.83	2008-2015	8.9	796.8	7.1	
Erie	MDN	W	42.16	-80.11	2008-2015	8.6	1085.2	9.4	
Cape Romain	MDN	W	32.94	-79.66	2008-2015	7.6	1243.8	9.4	
Bermuda		W	32.26	-64.88	2008/07-2009/12	4.7	1531	7.2	Gichuki and Mason, 2014
Xiamen		W	24.60	118.31	2013/07-2014/02	26.6	1143	30.4	Wu, 2014
Chengshantou		W	37.38	122.68	2007-2008	18.2	427.7	7.8	Nguyen et al., 2016

Site Name	Network	LUC	Latitude	Longitude	Period	Conc. (ng/L)	Prec. (mm)	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)	References
Pengjiayu		W	25.63	122.07	2009	8.85	1348	10.2	Sheu and Lin, 2013
Koksijde	EMEP	W	51.45	3.30	2009		650	2.7	Bieser et al., 2014
Westerland	EMEP	W	54.12	8.30	2009		740	3.9	Bieser et al., 2014
Niembro	EMEP	W	43.43	-4.85	2009		1028	1.8	Bieser et al., 2014
Råö	GMOS	W	57.39	11.91	2011–2014	9.4	603.8	5.7	Sprovieri et al., 2017
Mace Head	GMOS	W	53.33	-9.91	2012–2014	5.7	688.6	3.3	Sprovieri et al., 2017
Listvyanka	GMOS	W	51.85	104.89	2012–2013	6.2	32.5	0.2	Sprovieri et al., 2017
Sisal	GMOS	W	21.16	-90.05	2013–2014	8.9	691.1	7.0	Sprovieri et al., 2017
OA02		W	15.67	-96.50	2003/9-2005/13	7.9	894	7.1	Hansen and Gay, 2013
Cape Point	GMOS	W	-34.35	18.49	2011–2015	8.3	237.2	2.1	Sprovieri et al., 2017
Cape Grim	GMOS	W	-40.68	144.69	2013–2015	5.7	605.1	3.3	Sprovieri et al., 2017

Table S2: Litterfall Hg deposition distribution along different forest type (DB: Deciduous Broadleaf Forests; DN: Deciduous Needleleaf Forests; EB: Evergreen Broadleaf Forests; EN: Evergreen Needleleaf Forests; MIX: Mixed Forests; G: Grasslands)

Site name	Forest type	Latitude	Longitude	Elevation (m)	Period	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)	Conc. (ng/L)	Reference
Mt. Damei	DB	29.63	121.57	550	2012/08-2013/07	23.10	42.30	Fu et al., 2016
Mt. Dongling	DB	40.00	115.43	1100	2015/09-2015/11	15.60	48.70	Zhou et al., 2017
Roush Lake	DB	40.84	-85.46	244	2007-2009 2012-2014	13.90	39.93	Risch et al., 2017
Clifty Falls	DB	38.76	-85.42	256	2007-2009 2012-2014	16.03	48.73	Risch et al., 2017
SW Agr. Center	DB	38.74	-87.49	134	2015-2016	17.30	45.45	Risch and Kenski, 2018
Fort Harrison	DB	39.86	-86.02	260	2007-2009 2012-2014	17.37	46.27	Risch et al., 2017
Indiana Dunes	DB	41.63	-87.09	208	2007-2009 2012-2014	17.73	42.32	Risch et al., 2017
Mammoth Cave	DB	37.13	-86.15	236	2007-2009 2012-2014	12.60	40.40	Risch et al., 2017
Piney Reservoir	DB	39.71	-79.01	769	2007-2009 2012-2014	15.30	54.80	Risch et al., 2017
Marcell	DB	47.53	-93.47	431	2007-2009 2012-2014	3.58	25.80	Risch et al., 2017
Blaine	DB	45.14	-93.22	275	2007-2009 2012-2014	7.80	37.15	Risch et al., 2017
Mingo	DB	36.97	-90.14	105	2007-2009 2012-2014	13.27	39.80	Risch et al., 2017
Huntington Wildlife	DB	43.97	-74.22	500	2007-2009 2012-2014	11.25	45.10	Risch et al., 2017
Biscuit Brook	DB	41.99	-74.50	634	2007-2009 2012-2014	12.20	53.45	Risch et al., 2017
Athens	DB	39.31	-82.12	275	2007-2009 2012-2014	18.83	50.10	Risch et al., 2017
Allegheny Portage	DB	40.46	-78.56	739	2007-2009 2012-2014	13.38	45.46	Risch et al., 2017
Leading Ridge	DB	40.66	-77.94	287	2007-2009 2012-2014	9.60	44.24	Risch et al., 2017
Cape Romaine	DB	32.94	-79.66	1	2007-2009 2012-2014	14.87	40.47	Risch et al., 2017
Smoky Mountains	DB	35.66	-83.59	640	2007-2009 2012-2014	7.75	36.00	Risch et al., 2017

Site name	Forest type	Latitude	Longitude	Elevation (m)	Period	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)	Conc. (ng/L)	Reference
Shenandoah	DB	38.52	-78.43	1072	2007-2009 2012-2014	11.25	36.55	Risch et al., 2017
Popple River	DB	45.80	-88.40	421	2007-2009 2012-2014	10.00	34.30	Risch et al., 2017
Devil's Lake	DB	43.44	-89.68	389	2007-2009 2012-2014	4.60	35.47	Risch et al., 2017
Trout Lake	DB	46.05	-89.65	509	2007-2009	7.60	35.63	Risch et al., 2012
Bad River	DB	46.60	-90.67	625	2007-2009 2012-2014	7.77	29.50	Risch et al., 2017
Lake Geneva	DB	42.58	-88.50	288	2007-2009 2012-2014	14.30	49.80	Risch et al., 2017
Canaan Valley	DB	39.06	-79.42	988	2007-2009 2012-2014	9.33	39.20	Risch et al., 2017
Coolidge	DB	43.541	-72.754	552	2008-2009	24	73.9	Juillerat et al., 2012
Steam Mill Brook	DB	44.478	-72.228	649	2008-2009	18.1	81.4	Juillerat et al., 2012
The Waterworks	DB	44.171	-73.078	237	2008-2009	15.4	69.1	Juillerat et al., 2012
Wheaton College Campus	DB	41.964	-71.18	20	2010	10	33	Benoit et al., 2013
Camels Hump	DB	44.32	-72.886	1244	2010			Stankwitz et al., 2012
Sao Francisco do Itabapoana	DB	-21.6	-41.05	20	2006	24	31	Fragoso et al., 2018
Yangsu-ri	DB	37.53	127.33	60	2008/08-2010/02 2005/03-2006/03; 2010-2011;	2.1	50.2	Han et al., 2016 Wang et al., 2009; Luo et al., 2015;
Tieshanping	DN	29.62	106.69	500	2014/04-2015/03;	102.66	104.80	Zhou et al., 2016
Mt. Ailao	EB	23.70	101.02	2450	2011-2014	75.00	58.00	Wang et al., 2016
Mt. Gongga	EB	29.58	101.93	3000	2005/05-2006/04	35.50	35.70	Fu et al., 2010a
Mt. Jinyun	EB	29.87	106.41	900	2012/03-2013/02	43.50	104.50	Ma et al., 2015
Alta Floresta	EB	-9.95	-56.33	300	2013	44.825	55	Fostier et al., 2015
Candeias de Jamari	EB	-8.73	-63.47	90	2014	49.715	61	Fostier et al., 2015

Site name	Forest type	Latitude	Longitude	Elevation (m)	Period	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)	Conc. (ng/L)	Reference
Candeias de Jamari	EB	-8.63	-63.35	90	2014	46.455	57	Fostier et al., 2015
Rio de Janeiro	EB	-22.88	-43.88	250	2005-2006	184	237	Teixeira et al., 2012
Serra da Mantiqueira	EB	-22.302	-44.452	2000	2009-2011	34.6	57	Teixeira et al., 2017
Taquara	EB	-22.502	-42.856	72	2013	123.12	240	Buch et al., 2015
Três Picos State Park	EB	-22.598	-43.239	74	2013	20	40	Buch et al., 2015
Linzhi	EN	29.85	94.70	3200	2008/08-2008/09	4.20	12.60	Gong et al., 2014
Huitong	EN	26.83	109.75	400	2013-2014	33.60	176.10	Luo et al., 2015
Qianyanzhou, Jiangxi	EN	26.75	115.07	105	2013-2014	21.40	42.90	Luo et al., 2015
Great Smoky Mountains	EN	35.556	-83.5	1308	2008-2009	17.93	50.035	Fisher and Wolfe, 2012
Thompson	EN	47.384	-121.94	220	2008	8.7		Obrist et al., 2012
Truckee	EN	39.43	-120	1700	2007	20	9.238	Obrist et al., 2009
Lesní potok catchment	EN	49.967	13.683	448	2008-2012	18.5		Navrátil et al., 2014
Langtjern	EN	60.13	10.783	500	2004-2005	10.3	38	Larssen et al., 2008 Wan et al., 2009;
Mt. Changbai	MIX	42.40	128.11	736	2013/10-/2013/10	22.80	47.00	Fu et al., 2016
Mt. Leigong	MIX	26.39	108.20	2176	2008/05-2009/04	39.50	91.10	Fu et al., 2010b; 2016
Mt. Simian	MIX	28.58	106.37	1394	2012/03-2013/02	42.89	106.70	Ma et al., 2016
LuChongGuan	MIX	26.37	106.72	1360	2005/01-2006/01			Wang et al., 2009
Okefenokee	MIX	30.74	-82.13	45	2007-2009 2012-2014	4.50	31.54	Risch et al., 2017
Beltsville	MIX	39.03	-76.82	46	2007-2009 2012-2014	14.62	42.24	Risch et al., 2017
Seney	MIX	46.29	-85.95	220	2007-2009 2012-2014	6.26	41.80	Risch et al., 2017
Presque Isle	MIX	42.16	-80.11	177	2007-2009 2012-2014	7.55	28.85	Risch et al., 2017
Whiteface Mountain	MIX	44.37	-73.9	1483	2015	7	48.667	Gerson et al., 2017

Table S3: Speciated Hg dry deposition distribution along different land use type (B: Barren; C/N: Cropland/Natural Vegetation mosaics; C: Croplands; DB: Deciduous Broadleaf Forests; DN: Deciduous Needleleaf Forests; EB: Evergreen Broadleaf Forests; EN: Evergreen Needleleaf Forests; MIX: Mixed Forests; G: Grasslands; PW: Permenant Wetlands; S: Savannas; WS: Woody Savannas; OS: Open Shrublands; Urban and Built-up Lands; W: Water.)

Site name	LUC	Latitude	Longitude	Period	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)				References	Methods
					TM	GEM	GOM	PBM		
North District Ranger	B	38.12	-119.81	2010/06-2010/12; 2011/03-2011/10; 2012/02-2012/06			2.63		Wright et al., 2014	CEM
Mauna Loa	B	19.54	-155.58	2011-2014	69.80	4.28	33.75	10.00	Zhang et al., 2016b	Estimated
Cortez mine	B	40.20	-116.10	2008-2009		-5.26			Miller et al., 2011	DFC
Twin Creeks	B	41.20	-117.10	2008-2009		-32.41			Miller et al., 2011	DFC
Beiluhe	B	34.83	92.94	2013/06-2014/06		-25.05			Ci et al., 2016	DFC
Longview	C/N	32.38	-94.71	2011/09-2012/09			1.49		Sather et al., 2014	CEM
Corsicana	C/N	35.75	-94.67	2011/09-2012/09			3.00		Sather et al., 2014	CEM
Karnack	C/N	32.67	-94.16	2011/09-2012/09			1.31		Sather et al., 2014	CEM
Westing Park	C/N	24.25	120.80	2011–2012				11.04	Fang et al., 2012b	DDP
Taichung airport	C/N	24.25	120.60	2011–2012				12.09	Fang et al., 2012b	DDP
Lhasa branch	C/N	29.63	91.15	2013/04-2014/08				35.30	Huang et al., 2016	TSP/Estimated
Nanjing	C/N	32.05	118.78	2011/06-2012/02				62.60	J. Zhu et al., 2014	Anderson/Estimated
Kathmandu Valley	C/N	27.69	85.40	2013/04-2014/04				134.00	Guo et al., 2017	TSP/Estimated
Waldhof	C/N	52.80	10.75	2009		4.10	3.30	1.65	Bieser et al., 2014	Estimated
Yarner Wood	C/N	50.59	-3.70	2009		3.80	4.10	2.05	Bieser et al., 2014	Estimated
Elkhorn Slough	C	36.81	-121.78	2010-2011	11.25	10.90	0.10	0.20	Zhang et al., 2016b	Estimated
Antelope Island	C	41.09	-112.12	2010		12.10	1.70		Zhang et al., 2016b	Estimated
Horicon	C	43.47	-88.62	2011-2014	14.28	12.95	0.60	0.73	Zhang et al., 2016b	Estimated
Presque Isle	C	46.70	-68.03	2014	15.40	14.60	0.50	0.30	Zhang et al., 2016b	Estimated
Elora	C	43.65	-80.42	2006/11-2007/8		-55.19			Baya and Heyst., 2010	AGM
Yucheng	C	36.95	116.60	2012-2013		-62.20			Sommar et al., 2016b	REA

Site name	LUC	Latitude	Longitude	Period	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)				References	Methods
					TM	GEM	GOM	PBM		
Zingst	C	54.43	12.73	2009		0.80	2.30	1.15	Bieser et al., 2014	Estimated
Heigham Holmes	C	52.72	-1.62	2009		1.50	2.40	1.20	Bieser et al., 2014	Estimated
Auchencorth Moss	C	55.78	-3.23	2009		2.10	2.10	1.05	Bieser et al., 2014	Estimated
Banchory	C	57.07	-2.53	2009		2.10	2.10	1.05	Bieser et al., 2014	Estimated
Kollumerwaard	C	52.30	4.50	2009		3.00	3.40	1.70	Bieser et al., 2014	Estimated
Birkenes	C	58.38	8.25	2009		4.10	2.70	1.35	Bieser et al., 2014	Estimated
Piney Creek	DB	39.71	-79.01	2009/09-2010/10	14.40	3.50	3.20		Castro et al., 2012	CEM
Canaan Valley	DB	39.06	-79.42	2009-2011		3.05			Zhang et al., 2016b	Estimated
Huntington	DB	43.97	-74.22	2009-2012-2014	9.14	8.76	3.24	0.42	Zhang et al., 2016b	Estimated
Underhill	DB	44.53	-72.87	2009-2014	9.17	8.38	0.33	0.47	Zhang et al., 2016b	Estimated
Shenandoah	DB	38.51	-78.44	2008-2009		9.92			Converse et al., 2010	MBR
Mt. Leigong	DB	26.39	108.20	2008/05-2009/05	43.90				Fu et al., 2010a	Forest
Yangsu-ri	DB	37.53	127.33	2008/08-2010/02	9.90		4.78	4.37	Han et al., 2016	KSS
Tieshanping	DN	29.62	106.69	2005/03-2006/03	262.30				Wang et al., 2009	Forest
Chalk Mountain	EB	37.16	-122.29	2012/06-2012/10			4.38		Huang and Gustin, 2015a	CEM
Mt. Ailao	EB	24.54	101.03	2011-2014	95.10				Wang et al., 2016	Forest
Mt. Gongga	EB	29.58	101.93	2005/05-2006/04	66.50				Fu et al., 2010b	Forest
Mt. Jinyun	EB	29.69	106.30	2012/03-2013/02	49.40				Ma et al., 2013; 2015	Forest
Lower Kaweah	EN	36.57	-118.78	2010/06-2010/12; 2011/03-2011/10; 2012/02-2012/06			7.88		Wright et al., 2014	CEM
E.L.A	EN	49.66	-92.23	2008-2009	16.30	15.60	0.49	0.25	L. Zhang et al., 2012	Estimated
Qianyanzhou	EN	26.75	115.07	2013/12-2014/11	52.50	-40.21			Luo et al., 2016	AGM

Site name	LUC	Latitude	Longitude	Period	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)				References	Methods
					TM	GEM	GOM	PBM		
Huitong	EN	26.83	109.75	2013/12-2014/12	45.50	-17.78			Luo et al., 2015	Forest
Schmücke	EN	50.65	10.77	2009		4.10	4.00	2.00	Bieser et al., 2014	Estimated
Iskrba	EN	45.57	14.87	2009		0.80	5.40	2.70	Bieser et al., 2014	Estimated
Thompson Farm	MIX	43.11	-70.95	2009-2011	7.70	6.67	1.94	1.10	Zhang et al., 2016b	Estimated
Kejimkujik	MIX	44.43	-65.21	2009-2014	22.02	21.24	0.15	0.63	Zhang et al., 2016b	Estimated
Mt. Simian	MIX	28.62	106.40	2012/03-2013/02	59.61				Ma et al., 2016	Forest
Pinet	MIX	42.87	1.97	2010-2013		38.00	0.40	0.20	Enrico et al., 2016b	Estimated
Schauinsland	MIX	47.90	7.90	2009		4.30	3.00	1.50	Bieser et al., 2014	Estimated
Vavihill	MIX	56.02	13.15	2009		3.70	3.20	1.60	Bieser et al., 2014	Estimated
Fort Parker	G	31.61	-96.55	2011/09-2012/09			1.14		Sather et al., 2014	CEM
Mesa Verde	G	37.20	-108.49	2010/08-2011/08			8.58		Sather et al., 2013	CEM
Valles Caldera	G	35.86	-106.52	2009/08-2011/08			5.33		Sather et al., 2013	CEM
Navajo Lake	G	36.81	-107.65	2009/08-2011/08			5.30		Sather et al., 2013	CEM
Paradise Valley	G	41.50	-117.50	2005/03-2005/11; 2006/12-2007/2			5.10		Lyman et al., 2007; Huang and Guatin, 2015a	CEM
Gibbs Ranch	G	41.57	-115.21	2005/03-2005/11; 2006/12-2007/2			4.54		Lyman et al., 2007	CEM
Angel Peak	G	36.32	-115.57	2013/05-2013/12			20.15		Huang and Gustin, 2015a	CEM
Crooked Creek	G	37.50	-118.17	2012/06-2012/10; 2013/06-2013/09			10.51		Huang and Gustin, 2015a	CEM
Echo Peak	G	37.22	-116.33	2012/06-2012/11; 2013/02- 2013/011			24.53		Huang and Gustin, 2015a	CEM

Site name	LUC	Latitude	Longitude	Period	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)				References	Methods
					TM	GEM	GOM	PBM		
Great Basin	G	39.01	-114.22	2012/06-2012/10			22.78		Huang and Gustin, 2015a	CEM
Peavine Peak	G	39.59	-119.93	2013/04-2013/10			25.40		Huang and Gustin, 2015a	CEM
Cathedral Gorge	G	37.51	-114.63	2012/09-2012/12; 2013/01-2013/12			6.13		Huang and Gustin, 2015a	CEM
Lehman	G	39.01	-114.22	2010/06-2010/12; 2011/03-2011/10; 2012/02-2012/06			16.06		Wright et al., 2014	CEM
Substation	OS	36.80	-108.48	2009/08-2011/08			6.87		Sather et al., 2013	CEM
Berlin Ichthyosaur	OS	38.57	-117.78	2012/06-2012/9; 2013/06-2013/09			19.27		Huang and Gustin, 2015a	CEM
Pahrump	OS	36.34	-116.03	2013/05-2013/12			8.76		Huang and Gustin, 2015a	CEM
Brigantine	PW	39.46	-74.45	2009		17.80			Zhang et al., 2016b	Estimated
Stilwell	S	35.75	-94.67	2009-2013	7.26	6.46	1.73	0.32	Sather et al., 2013; Zhang et al., 2016b	Estimated
OLF	S	30.55	-87.38	2009-2014	8.00	7.40	1.87	0.20	Zhang et al., 2016b; Peterson et al., 2012; Huang et al., 2014; 2017	Estimated
Molas Pass	WS	37.75	-107.69	2009/08-2011/08 2010/06-2010/12;			3.00		Sather et al., 2013	CEM
Turtleback Dome	WS	37.71	-119.71	2011/03-2011/10; 2012/02-2012/06			10.22		Wright et al., 2014	CEM
Grand Bay NERR	WS	30.43	-88.43	2009-2014	16.78	13.55	2.38	0.85	Zhang et al., 2016b	Estimated

Site name	LUC	Latitude	Longitude	Period	Flux ($\mu\text{g m}^{-2}\text{ yr}^{-1}$)				References	Methods
					TM	GEM	GOM	PBM		
Yorkville	WS	33.93	-85.05	2009-2014	11.55	10.65	1.92	0.35	Zhang et al., 2016b; Lyman et al., 2009; Weiss-Penzias et al., 2011	Estimated
Athens	WS	39.31	-82.12	2009-2011 2014	4.63	2.50	1.45	0.70	Zhang et al., 2016b	Estimated
Pallas (Matorova)	WS	68.00	24.23	2009		3.00	3.20	1.60	Bieser et al., 2014	Estimated
Bredkålen	WS	63.85	15.33	2009		3.40	2.70	1.35	Bieser et al., 2014	Estimated
Farmington Airport	U	36.74	-108.23	2009/08-2011/08			5.67		Sather et al., 2013	CEM
D.R.I.	U	39.57	-119.80	2008/05-2009/02			9.98		Lyman et al., 2007	CEM
Reno	U	39.51	-119.72	2006/10-2008/10			6.80		Lyman et al., 2009	CEM
Tampa	U	27.91	-82.38	2009/07-2010/07			2.95		Peterson et al., 2012; Gustin et al., 2012	CEM
Davie	U	26.07	-80.24	2009/07-2010/07			2.78		Peterson et al., 2012; Gustin et al., 2012	CEM
New Brunswick	U	40.47	-74.42	2008-2009	23.90	23.00	0.90		L. Zhang et al., 2012	Estimated
Salt Lake City	U	40.71	-111.96	2009	10.80	4.04	4.35	1.00	Zhang et al., 2016b	Estimated
Birmingham	U	33.55	-86.81	2009-2014	2.35	-1.45	5.33	0.58	Zhang et al., 2016b	Estimated
Beltsville	U	39.03	-76.82	2009-2014	13.47	9.43	1.33	0.72	Zhang et al., 2016b	Estimated
NYC	U	40.87	-73.88	2011 2012 2014	8.90	6.57	1.37	0.63	Zhang et al., 2016b	Estimated
Qingdao	U	36.27	120.50	2008-2011				16.06	Zhang et al., 2015	TSP/estimated
Hungkuang	U	24.22	120.58	2010/11-2011/07				61.00	Fang et al., 2012a	MOUDI/Estimated
Quanxing	U	24.14	120.49	2010/11-2011/07				85.00	Fang et al., 2012a	MOUDI/Estimated
South Bass Island	W	41.66	-82.83	2013		5.20		0.80	Zhang et al., 2016b	Estimated

Site name	LUC	Latitude	Longitude	Period	Flux ($\mu\text{g m}^{-2} \text{yr}^{-1}$)				References	Methods
					TM	GEM	GOM	PBM		
The Gironde Estuary	W	45.16	-0.72	2005-2008	-3.50				Castelle et al., 2009	Estimated
Koksijde	W	51.12	2.64	2009	3.80	3.30	1.65		Bieser et al., 2014	Estimated
Westerland	W	54.13	8.87	2009	3.50	2.90	1.45		Bieser et al., 2014	Estimated
Niembro	W	43.43	-4.85	2009	1.20	3.50	1.75		Bieser et al., 2014	Estimated
Ráo	W	57.39	11.90	2009	2.30	3.20	1.60		Bieser et al., 2014	Estimated