

Coupling atmospheric mercury isotope ratios and meteorology to identify sources of mercury impacting a coastal urban-industrial region near Pensacola, Florida, USA

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Introduction

This supporting information includes one supplemental figure (Figure S1) and one supplemental table (Table S1). Figure S1 shows mass independent fractionation (MIF) of ambient atmospheric mercury (total gaseous mercury, TGM). Table S1 shows the concentration and isotopic composition of TGM for simultaneously collected field replicate samples. Thirty daily 24-hour TGM samples were collected from 24 July 2010 through 22 August 2010 in Pensacola, Florida, USA.

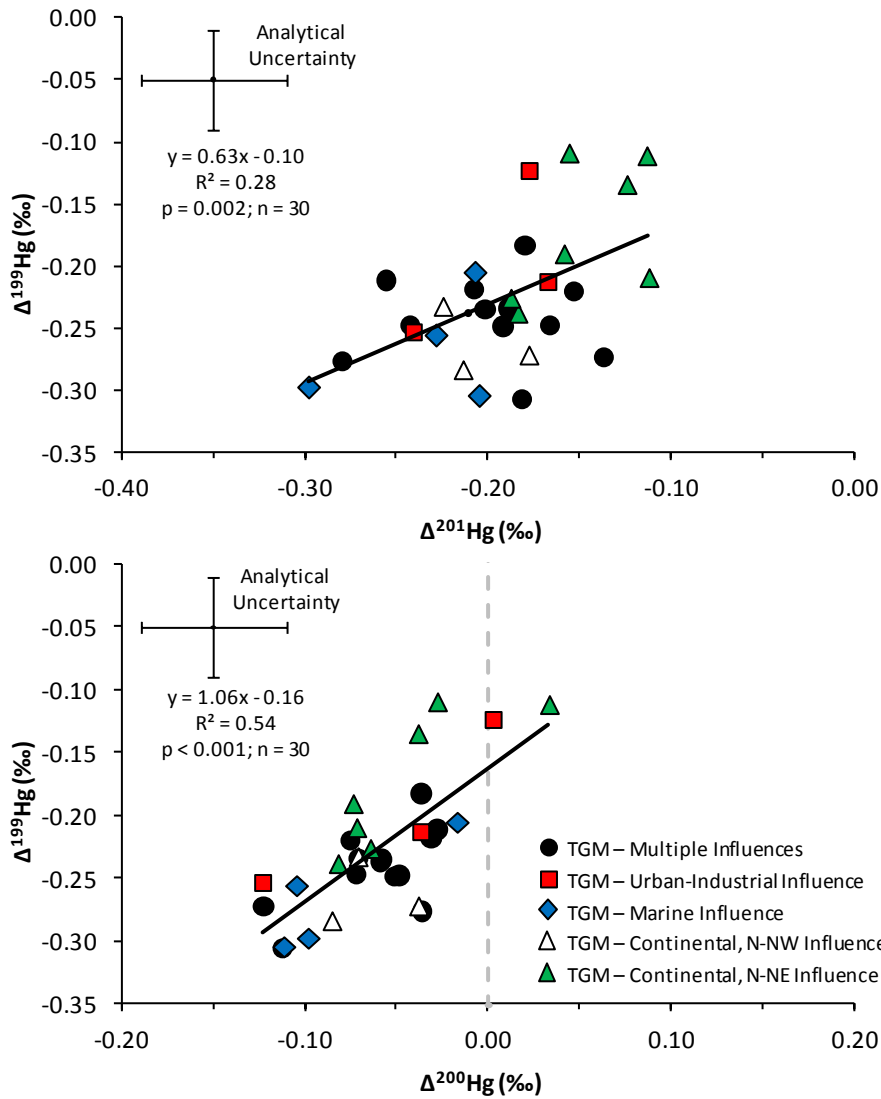


Figure S1. Mass independent fractionation (MIF) of ambient atmospheric mercury (Total Gaseous Mercury, TGM) in a coastal urban-industrial region near a coal-fired power plant in Pensacola, Florida, USA. The isotopic composition of each of the 24-hour daily TGM samples that were predominantly impacted by identifiable influences, as determined by meteorological assessments, are shown with different symbols, as detailed in the legend. The analytical uncertainty of samples is represented by the 2SD of average of session averages for UM-Almaden, or the 2SE of average of session averages for procedural standards, whichever uncertainty was largest (See *Methods: 2.4. Mercury Isotope Analysis*). Gray dashed line shows the zero-value for $\Delta^{200}\text{Hg}$.

Day of Study	Start Date	Hg		$\delta^{204}\text{Hg}$		$\delta^{202}\text{Hg}$		$\delta^{201}\text{Hg}$		$\delta^{200}\text{Hg}$		$\delta^{199}\text{Hg}$		$\Delta^{204}\text{Hg}$		$\Delta^{201}\text{Hg}$		$\Delta^{200}\text{Hg}$		$\Delta^{199}\text{Hg}$	
		Conc. (ng/m ³)	n	(‰)	2 σ (‰)	(‰)	2 σ (‰)	(‰)	2 σ (‰)	(‰)	2 σ (‰)	(‰)	2 σ (‰)	(‰)	2 σ (‰)	(‰)	2 σ (‰)	(‰)	2 σ (‰)	(‰)	2 σ (‰)
3	100726	0.98	1	1.22	0.08	0.80	0.04	0.39	0.05	0.38	0.04	0.01	0.04	0.03	0.04	-0.21	0.04	-0.02	0.04	-0.19	0.04
3	100726	1.06	1	1.58	0.08	0.95	0.04	0.52	0.05	0.47	0.04	0.02	0.04	0.16	0.04	-0.20	0.04	-0.01	0.04	-0.22	0.04
Average		1.02		1.40		0.87		0.45		0.42		0.02		0.10		-0.21		-0.02		-0.20	
11	100803	1.13	1	1.50	0.08	0.95	0.04	0.55	0.05	0.42	0.04	0.12	0.04	0.08	0.04	-0.17	0.04	-0.06	0.04	-0.12	0.04
11	100803	1.03	1	1.16	0.08	0.70	0.04	0.38	0.05	0.26	0.04	-0.09	0.04	0.12	0.04	-0.15	0.04	-0.09	0.04	-0.26	0.04
Average		1.08		1.33		0.83		0.46		0.34		0.02		0.10		-0.16		-0.07		-0.19	
30	100822	1.21	1	1.50	0.08	0.95	0.04	0.49	0.05	0.45	0.04	0.01	0.04	0.09	0.04	-0.22	0.04	-0.03	0.04	-0.23	0.04
30	100822	1.07	1	1.67	0.08	1.06	0.04	0.60	0.05	0.49	0.04	0.06	0.04	0.09	0.04	-0.20	0.04	-0.04	0.04	-0.21	0.04
Average		1.14		1.59		1.00		0.55		0.47		0.03		0.09		-0.21		-0.03		-0.22	

Table S1. Concentration and isotopic composition of ambient atmospheric mercury (Total Gaseous Mercury, TGM) measurements for simultaneously collected field replicates. Each set of replicate TGM samples was collected simultaneously over a 24-hour period with two completely independent sets of sampling equipment. The 2 σ for all samples shows either the 2SD of average of session averages for UM-Almaden, or the 2SE of average of session averages for procedural standards, whichever uncertainty was largest (see *Methods: 2.4. Mercury Isotope Analysis*). The start date is in YYMMDD format.