

***Interactive comment on* “Impacts of Large-Scale Circulation on Urban Ambient Concentrations of Gaseous Elemental Mercury in New York, USA” by Huiting Mao et al.**

Anonymous Referee #3

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This is a very interesting manuscript that demonstrates the significant impact of large-scale circulation on trace gases in an urban area, especially GEM. This innovative work yields surprising results that show the importance of meteorology and how it can dominate over anthropogenic emission sources; a surprising result to some. Except for a few minor comments, the manuscript is ready for peer review.

p. 6, line 111 – what type of catalytic converter was used on the TEI42C? If it was the usual moly (molybdenum) converter from TEI, it actually measures NO_y not NO₂. The Moly converter efficiently (100%) converts NO_y species to NO. A blue light converter will provide much more accurate measurements of NO₂.

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p. 9, lines 192 & 193 - these are surprisingly rapid increases in GEM.

p. 10, line 201 – this is an impressive increase in GEM. Was the calibration checked to ensure no issues with it that might have caused this change? I have never seen anything like this before. The reproducible sinusoidal fluctuations over several hours look to me like an instrument problem. What else could explain these? They are very pronounced and have characteristics of temperature fluctuations with where the instrument was housed. I would double-check these things.

p. 10, line 213 – what type of meteorological circulations would have caused this increase, and where did such a large source of GEM originate?

p. 19 – don't these significant decreases in SO₂ and NO₂ emissions additionally rule out these same sources as being important for GEM?

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