

Interactive comment on “Greenhouse gas observations from the Northeast Corridor tower network” by Anna Karion et al.

Anonymous Referee #2

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The paper presents an interesting dataset which is very important in the contexts of climate negotiations. The paper is well written and presents enough details to allow for evaluation of the quality of the presented dataset.

There are several technical and editorial points to be addressed prior to publication.

lines 28-29: please consider revising the language as “atmospheric measurements” do not detect trends by themselves, rather an analysis of those measurements

lines 47-51: the sentence is confusing, it reads as if agriculture is not included in anthropogenic emissions. Do you actually talk about the separation of fossil fuel and biogenic emissions?

line 75: section 4 presents etc

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line 105: are the coordinates of the planned sites known? If so, please include them in the table. Could you please explain why the inlet heights are different. What impact on the station footprint does the change of the inlet height have?

line 113: please spell out “USGS”. The intensity in development is used from the 2011 database. Has there been an evaluation of the trend in the intensity since 2011? Can those changes have an impact on the stations’ representativeness?

line 131: please spell out “EN GHG”

line 141: what defined 20 min sampling period?

line 155: please spell out “WMO”

line 167: WMO is the World Meteorological Organization

lines 175-179: in the calibration procedure, the first 10 to 15 min of data are filtered out to allow system for equilibration. It seems not to be the case for ambient air sampling. Could you please explain why you cut 75% of data in calibration and do not do the same in the other case (lines 330-340)?

line 231 states that the sensitivity is time-varying, though the calibrations happen every 22 hours. What is the temporal scale of variability you are talking about (as current calibration cycle misses diurnal variability)? What process drives the variability?

line 420: how does this equation account for the uncertainty of the sampling itself?

line 482: are there 1000 physical tanks?

line 544 that states that each measurement period represents a full hour is in contradiction with the earlier elaborations related to the comparison with NOAA flask sampling described in lines 380-387 (where it says that 40 min maybe not representative of the hourly variability)

line 546 refers to the vertical gradient that is calculated based on the measurements

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taken at the different heights and probably representing different parts of the planetary boundary layer. How reasonable is putting all estimates in one dataset and elaborate on the physical processes driving variability of the vertical gradients under such an approach?

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