

Interactive comment on “Using satellite observations of tropospheric NO₂ columns to infer long-term trends in US NO_x emissions: the importance of accounting for the free tropospheric NO₂ background” by Rachel F. Silvern et al.

Anonymous Referee #2

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This paper performed an intercomparison of trends between the emission inventory, satellite observations and in-situ measurements. It shows that the flattening of the OMI NO₂ trend is in fact not inconsistent with the sustained decrease of NO_x emissions reported by the NEI, and that the NEI emission trend is consistent with other atmospheric observations of NO_x and ozone trends, highlighting the importance of accounting for the free tropospheric NO₂ background. The paper is well written and the analysis is solid. I suggest publication after very minor revision. General comments: 1. Page 6, line 10. “But they used all AQS sites in that analysis including those with incomplete

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records, which could bias the trend.” Does this indicate that the sites without complete records have flattening changes? Where are those sites located? Any reasons why their trends are different from others? 2. Page 8, line 4. “the post-2009 flattening of the OMI trend is due to background influence rather than to leveling of US NO_x emissions.” An additional analysis about the possible driving forces for the changes of background emissions are appreciated.

Specific comments: 1. Figure 1. Please change the color for soil or fertilizer. It is not easy to distinguish them.

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