

Anonymous Referee #1

This paper describes a new method to obtain high resolution NH₃ columns from satellite by combining oversampling with wind-rotation. A global inventory of point sources is then developed by considering changes in columns for upwind and downwind locations. The science seems sound, the method is novel and the product will be very useful to researchers. Furthermore, the paper was very well written and a pleasure to read. I am happy to recommend it for publication.

Thank you very much for your review, your appreciation and positive assessment of the paper. Thank you also for the two references and corrections to the English – we have followed all suggested changes.

In terms of references, I would suggest adding the following 2 citations:

Page 3: The following is one of the early applications of oversampling: Russell, Ashley R., Lukas C. Valin, Eric J. Bucsela, Mark O. Wenig, and Ronald C. Cohen. "Space-based Constraints on Spatial and Temporal Patterns of NO_x Emissions in California, 2005–2008." *Environmental science & technology* 44, no. 9 (2010): 3608-3615.

Page 8, Line 1: As far as I am aware, the following introduced rotation first: Valin, L. C., A. R. Russell, and R. C. Cohen. "Variations of OH radical in an urban plume inferred from NO₂ column measurements." *Geophysical Research Letters* 40, no. 9 (2013): 1856-1860.

We have added these references now.

My only other comments are minor proof-reading comments.

Page 1, Line 1: is one *of* the primary, or is *a* primary

Corrected

Page 1, Line 6: do not use “allows to . . .” in English (see also line 15 and page 10, line 5). Allows needs a subject (allows you to) – which you probably don’t want here. Maybe “enables the”?

After having researched a bit the alternatives, in the end we went for the active form “*Oversampling allows one to increase the spatial resolution of averaged satellite data, beyond what the satellites natively offer.*” (so we added a subject) instead of the passive voice “Oversampling enables the spatial resolution of averaged satellite data to be increased” . We have also went through the rest of the text and fixed similar occurrences.

I’m not much of a fan of “so-called” – but that may be just personal preference.

We removed this from the abstract, and also once in the text.

Page 1, Line 20: what about: “diffuse background with higher concentrations” or something like that?

Corrected

Fig 1 Caption: “measurements” not “measured”

Corrected

Page 10, Line 19: town *of* Lanigan

Corrected

Page 10, Line 25: maxima not maximums, *the* location

Corrected (here and in two other places)

Page 10, Line 34: fix “with with”

Corrected

Page 11, Line 14: *by* varying

Corrected

Page 14, Line 1: This sentence seemed a bit hyperbolic

Yes, we agree and changed “*far beyond*” into “*beyond*”.

Page 14, Line 27: “and that allows” needs fixing. “go-to” sounds a bit clumsy.

We have reformulated these last two sentences now as follows: *For this reason, and to keep track of emerging emission sources, we have setup a website, with an interactive global map, visualizing the distribution, type and time evolution of the different point sources (<http://www.ulb.ac.be/cpm/NH3-IASI.html>). With the help of the community, we hope it can become a useful resource for information on global NH₃ point sources.*