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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Novel application of satellite and in-situ measurements to map surface-level NO_2 in the Great Lakes region" *by* C. J. Lee et al.

Anonymous Referee #2

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The paper introduces an interesting approach to link surface measurements and satellite observations of NO2, which allows to derive maps of surface-level NO2. It is well written and clearly structured. The methods (and their limitations) are explained comprehensibly. It should be published on ACP after minor revisions.

Comments:

1. Page 17248: It is mentioned later, but it should be pointed out already here that there are two different OMI NO2 products, with significant differences. Thus, it is not straightforward to compare the quantitative results from the various comparisons of OMI and in-situ data.

2. Page 17254 Line 21: The reference to Lamsal is misleading here; for both SP and DOMINO, one separate reference should be given.

3. Page 17264 Line 1: This is rather surprising; is there at least a relationship of H to e.g. temperature for a relaxed significance criterion?

4. Page 17265 1st paragraph: Is the decrease also observed in the in-situ data?

5. Page 17267 Line 1: Please specify "sufficient".

6. Caption Fig. 2: Please add "OMI" after "average" and give the period of the campaign.

7. Fig. 4: Std might be added as error bar.

8. Fig. 8: I was bemused by the yellow lines and first interpreted them as a sharp gradient in NO2; please choose a color which is not contained in the colorscale (like grey) and explain them in the legend (roads, borders, something else?)

9. Fig. 11: As in Fig. 8, the respective in-situ measurements should be added as color coded circles.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 17245, 2011.