

Interactive comment on “Multi-scale modeling of urban air pollution: development and application of a Street-in-Grid model by coupling MUNICH and Polair3D” by Youngseob Kim et al.

Anonymous Referee #2

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General Comment:

This work is focused on the coupling of a urban street network model (MUNICH) and a regional air quality model (Polair3D), in order to develop a new Street-in-Grid (SinG) model. It was applied over a Paris suburb for a limited period (from 24th March to 14th July 2014), excluding essentially the winter period which present critical conditions for pollutant dispersion. Although the grid step size of 1 km adopted in this work is not appropriate for urban air quality modeling, SinG could represent an alternate way to conduct it. The paper is well written and discussed. The hypothesis used in the development of MUNICH were clearly stated. I recommend acceptance of this paper

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for publication on GMD, but only after major revisions as suggested below.

Major revisions:

- 1) The addition of urban street network model is important for the spatial pattern as well as for the temporal pattern. For this reason, long term average comparison between SinG outcomes and observations, including for instance winter months is also necessary.
- 2) Comparison between the meteorological model (WRF) and observations, as well as between CTM (Polair3D) and measures are not clearly discussed. Measurements network included in domain 2 (Northern and Central France) could help to ascribe discrepancies during final comment about SinG results.

Minor revisions:

- page 9, line 3. Could be useful to detail grid domain features
- page 9, lines 9-16. Only NO_x are associated to traffic sources or other pollutants are considered?
- page 10, line 11. Which is the WRF version used in this work?
- page 10, line 13. As described in the major comments, WRF validation phase could be described through BIAS, CORR, IOA (Index Of Agreement). "Satisfactory results" have to be supported by statistical indexes - page 10, figure 4 - caption. Domain 1 and 2 are not clearly cited
- page 13, table 1. SinG-s configuration is not defined.
- page 15, line 2. Which is the MEGAN version?

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