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***Interactive comment on* “Contributions of local and regional sources to fine PM in the megacity of Paris” by K. Skylakou et al.**

Anonymous Referee #2

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The paper describes a method which allows for the apportionment of PM compounds from different sources. For the current paper, the method was extended by a description of the organic aerosol based on the VBS approach. As an application, the contributions of local and regional sources to PM composition around Paris are discussed.

The only part of the paper that needs significant revisions is the section where the PSAT technology is described. In particular, it is not clear, where the information about the ‘apportionment of the upwind grid cell’ comes from. Does PMCAMx-2008 distinguish already between the contributions from different sources, or is the transport also calculated in PSAT? And how is the information on the contributions from different sources passed to the system? As the cited paper by Wagstrom et al. (2008) is very vague about his (whereas the more complex OPSA method is described clearly there)

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the authors should add this information to their model description. Furthermore, the implementation to the VBS approach into the PSAT algorithm needs to be described in more detail, perhaps by including some equations.

Additional issues:

All pages: Avoid the use of 'predict', better use 'simulate' (or 'analyze' where appropriate).

Section 3.1.1: Are BVOC emissions also included for the Paris area? How does the spatial distribution of BVOC affect the results?

Section 3.1.2: Line 7: I think it is Wagstrom and Pandis, 2011 a. Besides of this: please give a definition of 'center of the plume'.

To which height do the curves in Fig. 6 refer?

Fig. 7: Better use a color scale that is similar to Fig. 9 in Wagstrom et al. (2008).

Last line of section 3.2: Please give a quantitative estimate of the removal by rain.

What is the impact of the annual course of the emissions?

Page 25781: Please explain HOA

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 25769, 2013.

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