

Interactive comment on “EXPLUME v1.0: a model for personal exposures to ambient O₃ and PM_{2.5}” by Myrto Valari et al.

Anonymous Referee #2

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I think the paper is interesting, but I have some concerns about it.

The main issue is that I found in the paper a lot of assumptions to be taken, to evaluate personal exposure. You would need in my opinion to carefully explain the implication of these assumptions, and how these affect (or not) the robustness of your results. I.e.: - pag 6 row 150-155. The authors speak about 'adjustment' of the concentrations, without specifying what they are doing, and the implications in terms of results' sensitivity. - pag 8 row 190-195. Assumptions on dwelling are proposed (25% vs 75%) without explaining why and which are the implications of this choice - Table 2: how the modelling results change modifying these parameters? Are these parameters robust? - pag 11 row 220-225. "we assume that if the itinerary of an individual intersects...": also here I am not able to evaluate the impact of this assumption. The authors should in my

C1

opinion clarify the impact of all these assumptions.

Another point. Now I already read a lot of papers in which population activities are derived using GPS (mobile phone i.e.) data. This is a more direct approach to 'individual exposure' as it allows to get the mobility of the people (at least a proxy) with a reduced number of assumptions. You should at least explore this option in the paper, and explain pros and cons of your approach in comparison to a 'GPS data' based approach.

I would like (pag 6 row 144) a bit more on the CHIMERE validation. Now it is difficult for me to judge if the model is working properly on the selected domain. Also in view of the 'adjustment' that the authors have to do (see my previous comment).

In the introduction it seems that the authors are claiming that PM_{2.5} and O₃ impacts on health are comparable. While in reality PM_{2.5} impact is much higher on population, than the O₃ one. Please try to be more accurate here, quantifying these impacts (as from EEA report on Air Quality Status 2019, i.e.).

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2019-259>, 2019.

C2