

Interactive comment on “Evaluation of a coupled dispersion and aerosol process model against measurements near a major road” *by*
M. A. Pohjola et al.

Anonymous Referee #2

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Review

of ‘Evaluation of a coupled dispersion and aerosol process model against measurements near a major road’ by Pohjola et al. (ACPD 7, 2819-2856)

This paper, compares particle size distribution measurements near a road in Helsinki at several locations (with a mobile measurement station, at different times) and compares the results with a model with multimodal monodisperse approach.

I had the ‘pleasure’ of reviewing a similar paper (Hussein et al., ACPD 4001-4034) by partly the same authors, SUBMITTED THE SAME DAY. This paper described experi-

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ments conducted at the same location (but at different times), and modeled also with a combination of a aerosol process model (a state of the art one!) and a dispersion model (same as in this work).

I really dislike this way of 'trying to maximise' the amount of papers. Both submitted papers have their flaws (but different ones) and would benefit a lot from combining. Still, there is practically no cross-referencing between these papers, and, actually the work by Hussein et al. isn't at all mentioned in this paper by Pohjola et al.

The paper by Hussein et al. is much more thorough in describing the experimental results, and also, the modeling approach used (the sectional model UHMA) is more up-to-date. However, this paper suffers from not knowing the 'initial distributions' at road side (instead, Pohjola et al. have estimations of the initial distributions). In contrast, an 'evaluation' of the cruder aerosol process model, as done in Pohjola et al., would really require a comparison to a sectional model such as UHMA.

So my main question is, why did the authors not use the complete data set, and compare both models against this set (and especially with each other) ???

Summing up, both manuscripts would really benefit from merging - this would in fact result in a really good paper. If, however, this is not the intention, my recommendation is to accept the paper by Hussein et al. with some modifications and reject the paper by Pohjola et al. (the reasons are listed below).

However, since the experimental results analysed in the paper by Pohjola et al. are somewhat more suitable for modelling purposes (in addition to knowing the initial distribution, the far- from-road measurements are conducted at various locations) than the ones reported by Hussein et al., I am adding some more detailed comments in the following, to guide a possible later resubmission.

Major points:

The authors main claims are that:

1. They couple a dispersion model (CAR-FMI) with an aerosol process model (MONO32).

2. their model is 'evaluated' (title of the paper).

The main conclusions of the work (in the abstract) are listed as:

3. Dilution is the most important process affecting the size distribution evolution.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 2819, 2007.

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