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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Incorporation of pollen data in source maps is vital for pollen dispersion models" *by* Alexander Kurganskiy et al.

Anonymous Referee #1

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It is my impression that the manuscript both falls within the scope, and is scientifically sound. The topic of the development of source maps, and the impact of these on the final model results, is very relevant for further development. However, this paper requires an intimate knowledge of pollen modelling and detailed reading of a number of background papers, to completely comprehend the analysis. The details of pollen dispersion modelling is not within my main area of expertise, and a thorough assessment of the method, is therefore beyond my current knowledge.

Questions / Comments

Do the authors have any comments on why the correlations are better for the stations in the P15 domain calculations? It is interesting that the "moderate" concentrations is generally underestimated and the "high" is generally overestimated by all combinations

of model/maps. Could the authors elaborate on possible explanations for this? What do the authors think is the explanation for the variation in the scaling factor, and the high values near Copenhagen (Discussion, page 8, line 26)? Is this map relevant for other applications, e.g. for selecting areas where further studies are needed to establish why modelled and observed values do not agree? Page 7, line 14-15 / 20-21 – The Danish sites are mentioned as having the highest R2. Could you comment on why the SCF run appears to result in lower R2 than the COR at these sites, opposite of most other sites. Perhaps in the discussion section.

Minor comments and/or typographical corrections

Page 5, line 7 - "... for use to simulate of the birch flowering season". I suggest to delete "of".

Page 5, line 10 – Reference for details on the choice of the seasonal pollen productivity?

Page 5, line 28 – Could you add further description of the pollen emissions scaling factor? It is not clear whether it is this factor that is further explained in line 30 and onward? If so, please apply the acronym here (line 30). Also, in line 30-31, it is unclear whether the scaling factor is based on the COR-run (simulations of type 2), and then following applied for all maps?

Page 5, line 34 - "... the COR ones..." I suggest to change to "COR-runs".

Page 5, line 34 - Two closing-parenthesis, delete one.

Page 6, line 1 – Again a reference to "the grid based scaling factor". I suggest to consistently use the abbreviation, you introduced on page 5, if it is the same "grid based scaling factor".

Page 6, line 14 – Define LRT-abbreviation as Long Range Transport.

Page 7, line 14 – I suggest to add a reference to appendix A for the referred MB results,

already in this line. I am aware that the reference is listed in the final line of this section, but I would prefer it also listed when the results are first mentioned.

Page 8, line 9 – HR has already been defined as Hit rate (page 6, line 28), so there is no need to write it out here.

Page 8, line 30 – "(too late flowering end"). I suggest to rephrase, e.g. "delay of end of flowering".

Page 9, line 22 - " . . . the need local calibrations. . .". Please add "for": ". . . the need for local calibrations."

Page 9, line 28-29 – This information borders on "method", could the latter part be moved to methods?

Figures

Fig 1 – I suggest to add a scale bar.

Fig 4-5. What is the order of the charts based on? The first and last appears to be the P15 domain, and the rest, the T15 domain. Perhaps move (a) and (l) next to each other, if there are no other reason behind the order.

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