

Interactive comment on “Identifying urban sources as cause to elevated grass pollen concentrations using GIS and remote sensing” by C. A. Skjøth et al.

Anonymous Referee #2

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General Comments: This manuscript presents an interesting study focused of detecting the sources responsible for elevated grass pollen load within city area. Authors used several different techniques (from GIS analysis to aerobiological methods) to obtain theirs goals. Very importantly authors used also management information to select places where Poaceae species can reach the maturity and liberate pollen. This is very valuable and novel approach in such kind of studies stressing that the identification of possible sources where plants can grow is not always equivalent to the areas of pollen emission. The testing hypothesis are correctly formulated and the experiments is very well designed. The manuscript is well written, the methods (ex. 2.3 GIS analysis) and discussion sections are clearly presented and are truly interesting. Generally the whole

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paper has logic structure. I have only few comments that should be briefly addressed.

Specific Comments: 1) Page 14229, line 14. Sentence: “However, at the same(. . .) counts (Table 1).” My question is how the situation looks like during the days with low pollen concentrations, i.e. <50P/m³. Does the correlation coefficient was still high (as for entire pollen season) or does it also decrease? Maybe it would be good to add some additional information to the Table 1, ex. below the sentence: Correlation with the operational trap in Viborg (above 50 grains m⁻³) add Correlation with the operational trap in Viborg (below 50 grains m⁻³).

2) Page 14226, line 6. I think it would be more correctly to write 95% method then 2.5% - it is not very common to find that kind of definition in aerobiological papers. Furthermore the value 2.5% is used only for calculating the start of pollen season but not the end of pollen season.

3) Page 14230, lines 6 - 18. The conclusions of this paragraph is not fully clear for me. In one hand authors stated that the highest concentrations of grass pollen in Aarhus Central (one of the three examined stations in the city) cannot be link with local sources but with long-distance transport (LDT) from eastern direction. The authors wrote that: “. . .either regional scale or long range transport of grass pollen can be relevant”. However authors stressed that LDT of pollen is only episodically - based on the transport of Ambrosia pollen to Poland (Smith et al. 2008) and therefore still the local sources are the most important sources of grass pollen. I'm not sure if Ambrosia pollen is a good example here: the LTD of Ambrosia pollen to Poland usually concerns several hundreds of kilometers and additionally through very diverse landscapes (ex. mountains). In the case of grass in Aarhus I suspect that the distance from the nearest grass sources located somewhere on the east is much closer (probably less than 100 km?) and the transport of air masses is easier (more or less "flat" land area or sea surface). In other words, based on the one year pollen data, it is just difficult to conclude that the long (maybe medium?) transport of grass pollen to Aarhus Central is a rare phenomenon and should not influence strongly on the pollen counts. Although I believe

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that authors are right about this issue and generally I agree with their last sentences in the Discussion chapter (page 14235, lines 2-7) however probably more data are needed to conclude without doubts that LTD of grass to Aarhus occurs only episodically. Therefore I would like to encourage authors to continue this interesting experiment during the next years just to be able to estimate the real importance of medium range transport of grass pollen to the city.

Some other technical/spelling mistakes were noticed however they have been already corrected by Authors in their "Reply to reviewer 1" so I will not write it once again.

Interactive comment on Biogeosciences Discuss., 9, 14217, 2012.

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