Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2019-455-RC2, 2019

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.

Rachel McInnes (Referee)

rachel.mcinnes@metoffice.gov.uk

Received and published: 12 August 2019

General comments: This is a really nice piece of work which adds to a very topical area of study. It is novel and extends scientific progress in this area. I believe it is relevant to the scope of the Atmospheric Chemistry and Physics journal.

The authors demonstrate the importance of including observational pollen data in producing pollen source maps for pollen dispersion modelling, and they outline the health impacts for the population which is why this modelling is so important.

Specific comments: Section 2.1 – while you have provided information on the datasets used and references to explain the methodological differences between map 1, map 2 and map 3 – it is quite difficult to overview the 3 methods at a glance, in order

to compare and contrast. I suggest that a graphical diagram outlining the method / flowchart for each different map might help the reader understand the differences between the three maps being compared.

Section 2.2& 2.3 – what dates were the models run over? This needs clarified please. E.g. in Section 2.2 when discussion the GDD data - can you clarify what dates were used for the input data? In 2.3 you state: "Input meteorological initial and boundary conditions were taken from the ECMWF-IFS model (Persson, 2011) with 15 km resolution and 6-hour interval" – this would be a good point to say what years the models were run over. When you mention the Birch 2006 season – is that this work, or are you referring to previous work?

Section 2.3 – what was the reason for excluding the method 1 results from the results section?

Section 3 – "The largest differences between the modelled and observed number of cases are found for the moderate and high pollen concentrations." – but are these all within the error bars, see Fig 7?

Section 4 – can you comment in the manuscript on what work you believe would need to be done to try to improve the modelling of the last flowering day?

Section 4 – "that also demonstrated the need for recalibration of the source term. However, it has since been shown by Zink et al. (2017) that source terms combining pollen data from several years with detailed land cover data can outperform other approaches minimizing the need local calibrations. " - Linked to my earlier question - has this study only been carried out for the one year? Please clarify and comment on the impact of how long a period you are doing this analysis over may have on the results.

Section 5 – "The analysis did not reveal significant dependency of the start/end of the birch pollen season on the underlying pollen source map." – can you please explain why you would expect it to? I don't understand how this could be related to the source

map.

Technical corrections:

* Page 2 L10 – grammar – “skin prick test” -> “skin prick testing”

* Page 2 L18 - grammar - “The literature review presented in this section show” -> “The literature review presented in this section shows”

* Figure 2 – caption. Might be worth explaining what the units of % mean here (%) – I’m not sure all readers will understand this. I.e. ‘percentage cover of birch in each 15km x 15km grid square’.

* Page 4 L16 – grammar – “The National Forest Inventory statistics was” -> “The National Forest Inventory statistics were”

* Page 5 L3 – typo - remove brackets from reference

* Page 5 L10 – typo – remove closing bracket.

* Figure 7 caption – typo – ‘rght’ to ‘right’

* Page 9 L10 – grammar – “This suggest” -> “This suggests”

* Page 10 L18 – grammar – “advices” -> “advice”

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2019-455, 2019.