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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Using SEVIRI fire observations to drive smoke plumes in the CMAQ air quality model: the case of Antalya in 2008" *by* G. Baldassarre et al.

Anonymous Referee #1

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The paper addresses an interest issue relevant with the estimation of forest fire emissions, their characterization in terms of spatial resolution and temporal analysis. The paper presents also the impact of big forest fires on air quality of the Eastern Mediterranean which is also an interesting topic, considering the expected increase in the fire activity in the area due to the climate change.

The paper can be published in ACP considering though the following necessary revisions:

1) Section 3.2: The authors should try to better explain the differences in the amount

of emissions estimated with the different algorithms and with GFASv1.1. Not only in figure 3a but also in figure 3b, the existing differences in daily values are important. In figure 3 similar plots should be presented form CO, NH3 and NOx. NH3 emissions are missing in Table 1.

2) Section 3.3: In the section the temporal and vertical distribution of fire emissions is presented. Which is closer to the reality? Is there any validated evidence?

3) Section 4: Are there any observations of pollutants surface concentrations to compare with model results and strengthen the performance of the chemical model?

4) Section 4.1: Present and discuss (i.e. compare with plot 6b) the maps of AOT estimated from the different model runs not only as simulated changes in AOT due to forest fires but also as absolute values. Which of the vertical cross sections presented in figure 7 are closer to the real conditions; provide validation evidence and explain (in relation also to comment 2)?

5) Figures 10 and 11 present a not good model performance when the WF_ABBA algorithm is used. Which are the necessary improvements to the algorithm according to the authors' opinion to ensure better emissions estimation and chemical model results?

6) Figure 14 is presented but not discussed in the manuscript.

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