Atmos. Chem. Phys. Discuss., 15, C3810–C3812, 2015
www.atmos-chem-phys-discuss.net/15/C3810/2015/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "In-situ, satellite measurement and model evidence for a dominant regional contribution to fine particulate matter levels in the Paris Megacity" *by* M. Beekmann et al.

Anonymous Referee #2

Received and published: 19 June 2015

This paper brings together the analysis of air quality over Paris region, based on ground based as well as satellite measurements and the source apportionment of aerosols using chemistry transport models. Results from two short intensive campaigns during summer and winter as part of MEGAPOLI, one year longer campaign during the PARTICULE project, aerosol optical depth (AOD) measurements from ENVISAT and modelling results from PMCAMx and CHIMERE were compared. The authors conclude that about 70% of the fine particulate matter mass is transported into the megacity from the upwind regions and local contributions are very small. However the results itself are not surprising and new as there are many studies published with the same result on the

airquality of Paris in the last couple of years(Bressi et. al., 2014, Crippa et. al., 2013, 2013a, Crippa et. al., 2013b, Freutel et. al., 2013, Ghersi et. al., 2008, Petetin et. al., 2014, Skyllaku et. al., 2014 and a couple of others..). At the same time this paper reconfirm the results with different methods and also compares the Paris megacity with many other megacities over the world. I find this within ACP's remit and recomment publication after addressing the following corrections which are mostly technical.

Specific comments:

P8650, L12: Use 'the' North-Eastern US.

P8654, L16: Do you mean that the uncertainty of PMF analysis is corrected by the error analysis? Or, the error analysis of PMF analysis yields an uncertainty of several percent? It should be made more clear so the ambiguity with PMF analysis and thus the confusion with the errors used in the weighting matrix can be avoided.

P8656, Last paragraph continued to P8657: Please make the sentence and concept clear. The statement is contradictory to previous statement on P8655,L22-24. Does it mean that the larger concentrations for OA in winter were failed to detect due to the non availability of AMS measurments on three days of pollution episode in Januray?

P8657, L1-4: Make the sentence clear. Please explain what is meant by 'having accumulated the corresponding emissions'

P8658, L23: Is it PMF analysis the authors mean by saying 'a specific source apportionment method'? Or do you use any other methods? Make it clear here in order to avoid confusion.

P8663, L14: Which meteorology are you using in the model? The surface winds in march shows Cyclonic circulations over most of Europe in March in the ECMWF meteorology. The authors might have meant Cyclonic circulation, which could explain the continental air bringing pollutants to Paris. Clarify this part.

Figure 1: Increase the colour contrast between the map and the labelling on the figure.

ACPD

15, C3810–C3812, 2015

Otherwise use numbers or symbols to represent the locations and give the legend outside of the map.

Figure 3: What is the undefined here? Is it the uncertainty percentage?

Figure 4: Figures are very small. Make the figures larger to fit to the page.

Figure 5: Again figures are very small and not clear. Make it fit to the page.

Figure 6: Figures small and unclear. Make larger fit to the page figures. The labelling on the colour bar is not readable, also this needs to made with a larger font size.

Figure 7: The legent within the figure is not readable. Increase the font size.

Figure 9 and 10: Make figures larger and fit to the page so that it is properly readable.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 8647, 2015.