Atmos. Chem. Phys. Discuss., 12, C7000–C7002, 2012
www.atmos-chem-phys-discuss.net/12/C7000/2012/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Uncertainties in SOA simulations due to meteorological uncertainties in Mexico City during MILAGRO-2006 field campaign" *by* N. Bei et al.

Anonymous Referee #1

Received and published: 17 September 2012

The paper investigates the uncertainties in SOA simulation by focusing on the uncertainty in the meteorology. The main strength of the paper lies in a very detailed analysis of two specific days using a large number of ensemble simulations, perhaps this is also a potential weakness of the paper, as analysis of just two days makes it hard to generalise the results. The number of analysed days is probably limited by the long run time of the chemistry model. Nevertheless, the paper clearly shows the importance of meteorology when SOA is simulated in the Mexico City basin for the specific days included in this paper. A more detailed description of the two observation sites is needed to show how representative these locations are when compared with the model results.

Specific comments:

P16297, line 18: Is the WRF model initialised at 00:00 UTC at the beginning of 24 and 26?

P16297, line 26: Can the author briefly justify the choice of WRF parameterisations used here? Are these the most up to date and appropriate use of parameterisations schemes for air quality applications? This would be useful information for air quality modellers.

P16297, line13: Can the author briefly expand on what a "...flexible gas phase..." means and why this choice has been made?

P16297, line15: As above, expand briefly on the "...Non-traditional SOA..."

P16299, line 1: The authors state that boundary, condition, and emissions inventory are kept unchanged for all ensembles. Does this apply to the biogenic emissions too? It may not be important, but has the author considered this?

P16299, line 6: The Authors have chosen the 29th, but why?

P16300, section 4.1: The authors often state that ensemble means better performance compared to the reference deterministic forecast. However, a quantitative index may be a useful addition. Something like a Taylor plot showing correlation, bias and perhaps mean gross error for the ensemble mean, min, max and best member may help to visualise each selected member performance.

Minor comments:

P16295, line 17: the sentence "They found that the..." is not clear, please reword.

P16299, line16: In Figure 3 it is difficult to distinguish the wind barb (at least in my copy). I suggest making the wind barb larger and maybe showing only half of them. Also the labels of the geo-potential height are too small. In the caption the GFS-FNL is referred in the text as NCEP-FNL.

ACPD
12, C7000–C7002, 2012

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 16293, 2012.

ACPD

12, C7000–C7002, 2012

Interactive Comment