

Interactive comment on “Comparative evaluation of the impact of WRF/NMM and WRF/ARW meteorology on CMAQ simulations for PM_{2.5} and its related precursors during the 2006 TexAQS/GoMACCS study” by S. Yu et al.

Anonymous Referee #2

Received and published: 15 February 2012

This numerical modelling work examines the operational performance of two CMAQ simulations, with one using meteorological data provided by WRF-NMM (NMM-CMAQ) and the other using data provided by WRF-ARW (ARW-CMAQ). The performance characteristics of each simulation are methodically presented. While the performance results are presented neatly, the manuscript fails to discuss the reasons for the differences in performance between the two simulations. The sensitivity of the CMAQ modelling system to different meteorological fields in relation to air concentrations of PM_{2.5} and its related precursors is demonstrated. This result is to be expected and calls for

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reasons for the differences. The manuscript is in need of more interpretation in light of the simulated meteorology. Even though an operational evaluation of the model for a case study is of interest, it does not in itself represent a substantial contribution to scientific progress within the scope of ACP. The manuscript is a bit too descriptive; it needs more interpretation and explanation of the results before I can recommend it for publication.

Below are some more specific comments (some editorial).

P32033, L20: Please explain what is meant by 'differently'?

P32034, L18: The manuscript presents the sensitivity of the CMAQ modelling system to different meteorological fields in relation to air concentrations of $\text{PM}_{2.5}$ and its related precursors. Why is the purpose of the manuscript twofold?

P32035, L5: The WRF model has been around for some time now, so I would suggest deleting 'new'.

P32036, L5: Please delete 'the' before 'CMAQ'.

P32037, L15: What is the Part 1 paper?

P32038, L24-25: Please explain what is meant by 'majority of the observed daily $\text{PM}_{2.5}$ concentrations with a factor 2'? Please give the percentage.

P32039, L11: Why 'slightly consistent'?

P32039, L21-22: Please explain what is meant by 'majority of the observed daily $\text{PM}_{2.5}$ concentrations with a factor 2'? Please give the percentage.

P32041, L22 to P32042, L3: Presumably, this can be checked using results of the simulations.

P32043, L15-19: Because SO_4^{2-} , NO_3^- and NH_4^+ are sensitive to NH_3 , is the overestimation of NH_4^+ reflected by an overestimation of SO_4^{2-} and/or NO_3^- ?

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P32045, L6: Please delete 'the' before 'similar'.

P32047, L28: Please delete 'the' before 'consistent'.

P32048, L10-13: Maybe, but this is not shown.

P32059, Figure 3a: Right column, middle, should be NO_3^- .

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 32031, 2011.

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