

The authors thank the editor for the constructive comments. Our detailed replies to the comments are given below.

1 There are still many grammatical and syntax errors throughout the manuscript which must be corrected prior to publication using the Copy Editing option.

Reply: We try our best to check the grammatical and syntax errors, also contact to Anna Wenzel (anna.wenzel@copernicus.org) for the copy-editing service.

2 The references should be introduced systematically when the lead author has published a number of articles which are cited in the same year i.e. Wu et al, 2010a comes before Wu et al, 2010b. Please check

Reply: Thank you for the reminder, the references have been check.

“Wu et al. (2010c)” updated to “Wu et al. (2010a)”

“Wu et al. (2010a)” updated to “Wu et al. (2010c)”

The order of the references are also been checked. Streets et al. (2006) and Streets et al. (2007) is exchanged in the references list.

3 Table A1; Only use 2 significant figures thus removing redundant decimals e.g. 0.050 → 0.05

Reply: The Table A1 has been updated according this comment.

4 Figure 3: Key is not readable. Improve the resolution of the figure or increase the size of the colour bar.

Reply: Figure 3 has been updated: delete the original upper left figure about the population in North China, leave the figure about the population in Beijing, and improve the resolution of figures and add their legend. The caption is updated as followed:

“The SMOKE-area emissions have been spatially allocated based on the related spatial factor, such as its population data provided from Land Scan 2005 Global Population Database (Dobson et al., 2000). The left is the spatial distribution of the population in Beijing Municipality in the Land Scan 2005; the right is the spatial distribution of the PM10 emissions in the inner domain in the forecast system.”

5 Figure 4: Expand size of panels for clarity and reduce white space.

Reply: Thank the Editor for this comment, and the white space in “Figure 4” has been reduce in the manuscript.

6 Figure 9: Use black for Femis+NewDomain instead of Green. You cant see the faint green line as presented.

Reply: Thank the Editor for this comment. The color of “Femis+NewDomain” line has been replaced to “black”.

7 A section entitled code availability should be added onto the end of the manuscript as required for the journal (please read the obligations for authors section). Preferably the code should be provided as a zipped file with instructions on how to compile the code. Also, details should be given regarding the compiler used for testing the code.

Reply: The source code is ready and uploaded to vip FTP 159.226.119.102 as named “CMAQ2GMD.zip”, and a “readme” about how to compile the code is in the zipped file. And the “code availability” has been added in the end of the manuscript.

8 Figure 1 (Supplementary) legend: Correct “green tringle”.

Reply: The legend “green tringle” has been added for the surrounding station.

9 Supplementary: Section 2: Remove the sentence According to the suggestion of referee 1

.... .

Reply: The sentence has been removed.