Atmos. Chem. Phys. Discuss., 13, C8759–C8763, 2013
www.atmos-chem-phys-discuss.net/13/C8759/2013/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Source, transport and impacts of a heavy dust event in the Yangtze River Delta, China in 2011" *by* X. Fu et al.

Anonymous Referee #1

Received and published: 4 November 2013

The paper presents an interesting analysis of dust storm in the Yangtze River Delta based on the simulation from the CMAQ air quality model. The manuscript is well written and easy to understand and is an interesting contribution to the scientific literature. I recommend it for publication in ACP after the authors provided additional clarifications and addressed the comments given below. I hope the authors are able to address these comments, perform the requested changes and revise the manuscript within a couple of weeks.

The comments:

1. In general, the simulations are much higher than the observations for the wind speed because of the low resolution of the terrain and landuse, especially in the coarse do-

main. Therefore, the nearly perfect comparison between simulations and observations in the manuscript is not reasonable. Please clarify it.

2. Wind direction is strange parameter. 360 and 0 is the same for the wind direction. However, when you want to calculate the average of the wind direction, you will get a result of nearly 180. When you calculate the average of the wind direction in a period or a region, mostly you will get a result from 90 to 270. Please clarify the method you used to calculate the wind speed in your manuscript.

3. In the manuscript, the authors compared the simulations and observations of the PM10. Could you please give us the comparison of the spatial distribution for the PM10 concentrations? In this way, more information will be illustrated, such as the comparison in different days, the pathway of the dust storm and so on.

4. As for the dust storm, except for the ground observations downloaded in the website MEP, satellite data also should be used to do the comparison, such as AOD and AAI (absorbing aerosol index). As shown in the figure in 29 April, there are two points of the highest concentration of the PM10. However, you can only get one maximum point in the simulation. In addition, no dust storm was observed in 28 April and the spatial distribution of the AAI was also not consistent with the simulations. Please clarify it.

5. I noticed the wet deposition was much higher than the dry deposition for the PM10. The authors illustrated that the wet deposition was main occurred over the sea. However, even in the mainland of China, the wet deposition was also the main loss compared to the dry deposition. Why? Could you please give us some description of the cloud fraction and precipitation?

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 21507, 2013.

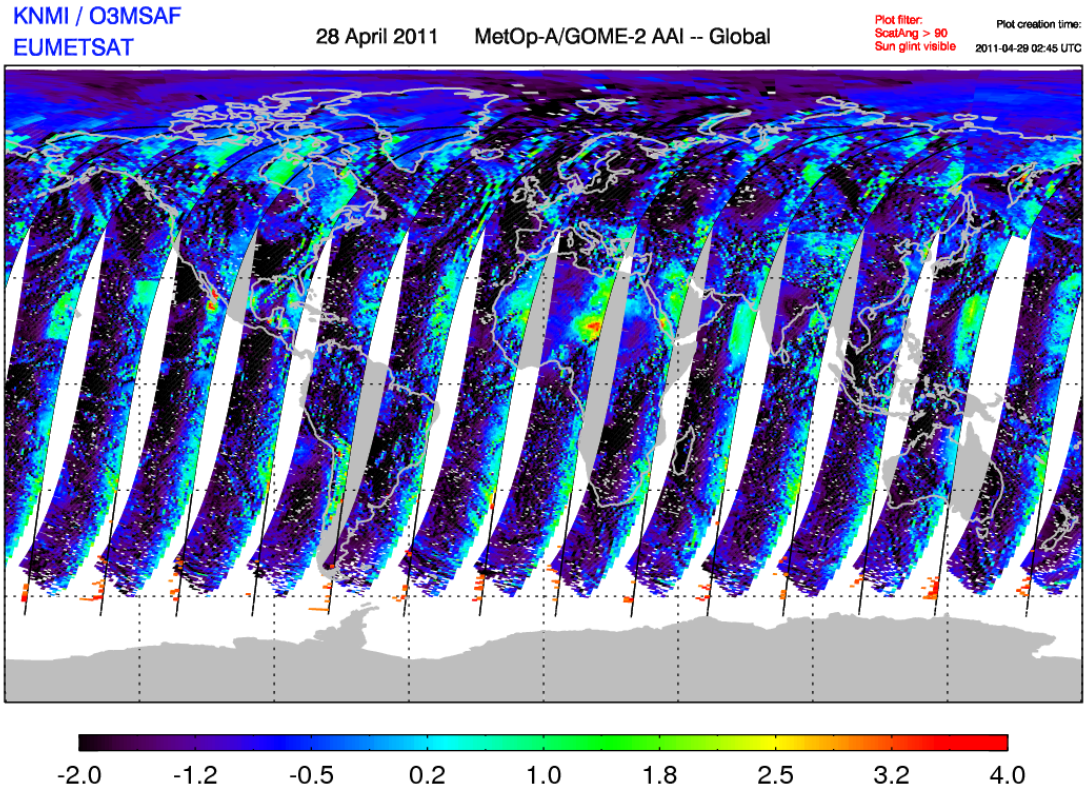

Fig. 1.

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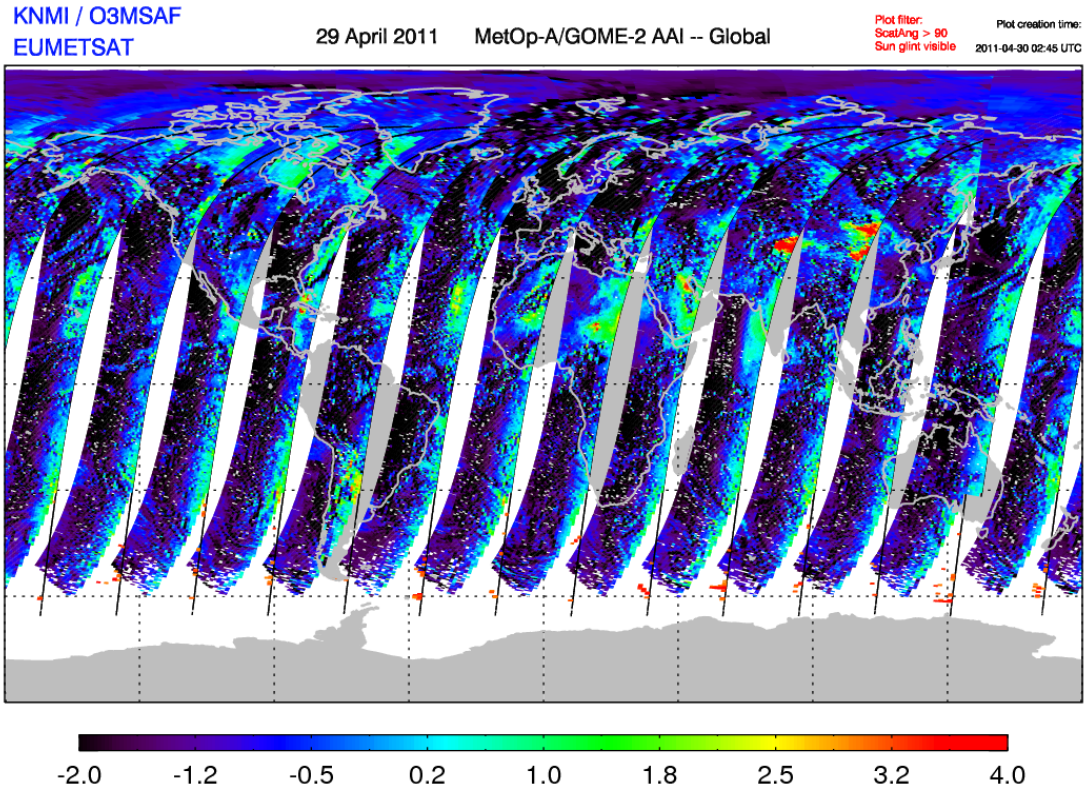

Fig. 2.

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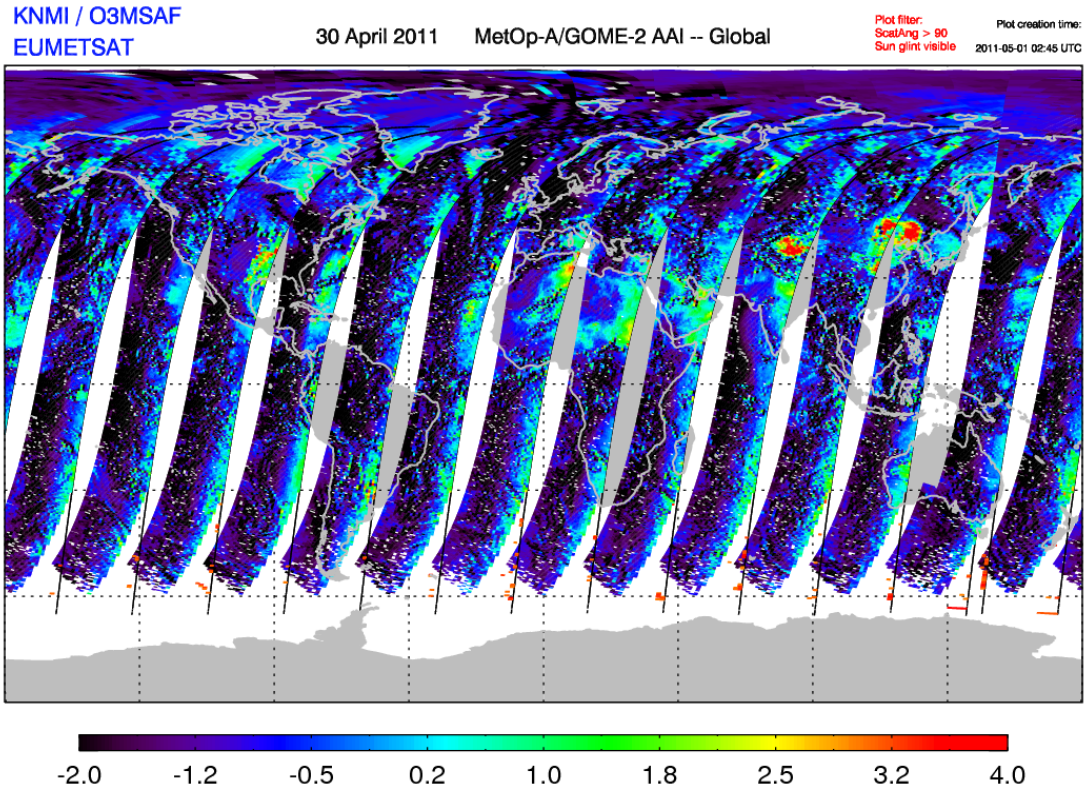

Fig. 3.

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