Atmos. Chem. Phys. Discuss., 11, C10524–C10525, 2011
www.atmos-chem-phys-discuss.net/11/C10524/2011/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Up/Down trend in the MODIS Aerosol Optical Depth and its relationship to the Sulfur Dioxide Emission Changes in China during 2000 and 2010" *by* S. Itahashi et al.

Anonymous Referee #1

Received and published: 18 October 2011

Reviewer Comments This is an interesting research which represents a significant amount of work. It could be publishable, but after some revisions and clarifications. I suggest that the following modifications and additions should be made.

General comments, 1) Authors used AODf which includes impact of BC, OC, nitrate, and etc as well as sulfate. The influences of other species, however, were not included or analyzed in this study. 2) The measurements from ground stations and satellite data over the ocean were used to support the authors' findings – especially for the impact of the installments of FGDs on SO2 emission reductions. The SO2 emissions, however, are mainly emitted from land not ocean, which make authors' analysis very indirect. If

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

the ground measurements of other countries are too hard to get, the satellite measurements over China can be used as an alternative. I think that authors should analyze the environmental satellite measurements of related species, such as SO2, NOx, aerosols, over emission source regions to support their arguments and/or conclusions.

Specific comments (listed as page(line)) 1. 21979(11), 21979(15), and elsewhere – Need to use the same name convention, either Figure 1 or Fig. 1. 2. 21979(24) – Correct this typo "loccaly" 3. 21981(15) – Correct (Lu et al., 2010) 4. 21981(24-25) – It would be better to modify this part into "∼significantly, ranged from 0.4–0.5 Mt yr−1, but decreasing slightly." 5. 21982(7) – It needs more than one sentence per a paragraph! 6. 21990(Fig 2.) and 21991(Fig 3) with corresponding pages in the manuscript - In the comparison between panel a (satellite) and b (model), model seems to underestimate AOD, especially over the Yellow sea which is the most important ocean area to evaluate direct pollutant transport. Model performance evaluation, therefore, needs to be presented. - I agree that the panel c shows general increase, panel d shows decrease over the domain. However, AODf over the Yellow sea and near Hokkaido area increased in the panel d, which is an opposite result against the authors' arguments. Also, the regions with rectangles were selected only in the regions that showed increasing trends in the panel c and decreasing trend in the panel d. The result in the Figure 3 could be misleading because of the biased region selection. 7. 21992(Fig 4) - From year 2005 to 2008, MODIS AOD and SCIAMACHY showed an opposite interannual trend. It would explain why the emission analysis using remote sites could be misleading. Authors need to explain the limitation of their analysis and add little more analysis on this point.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 21971, 2011.

ACPD

11, C10524–C10525, 2011