Atmos. Chem. Phys. Discuss., 7, S3022–S3024, 2007
www.atmos-chem-phys-discuss.net/7/S3022/2007/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Retrieving global sources of aerosols from MODIS observations by inverting GOCART model" *by* O. Dubovik et al.

O. Dubovik et al.

Received and published: 11 July 2007

We thank referee for her/his encouraging comments and numerous very useful recommendations.

We have carefully analyzed the reviewer comments and tried to address all her/his questions and comments in the revised manuscript and in the present response. Detailed explanations are given below.

1. English. As suggested by the referee we have put a significant effort in improving level of English in the manuscript. First, we have included all corrections suggested by the referee (that are quite many). Then we have asked highly qualified native English speaker to read over and correct the manuscript.

2. As suggested by the referee, we have added the figure (2) that illustrates formula-

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

tions of aerosol transport modeling using vector formalism. We hope this figure will be helpful for the reader to understand the index convention that we used in the paper for vector notations.

3. We have seriously considered the suggestion of the referee to reduce or reorganize (by moving more equations to the appendix) the equations in the paper. Here the answer to this comment of referee and the explantaions of cahnges we have done to address the issue:

- We did not favor removing the equations because that would significantly undermine the original idea of the paper that was to show the analogies of inverse modeling with inversion approaches of remote sensing that are helpful for emission retrieval developments. We agree with the reviewer that a fraction of main equations were already shown in paper by Dubovik et al., ÓPTICA PURA Y APLICADA - Vol. 37, núm. 3 - 2004. However, that was a conference proceedings publication (without proper level of reviewing) in the journal that is not widely read by aerosol community. We believe that the reviewer is aware of that paper mainly as a result of the author efforts to publicize their new results. More importantly, that paper does not provide the derivations of the equations and many other details that are necessary for establishing the scientific credentials of the results. In stead, the paper by Dubovik et al. 2004 directs the reader to the paper in preparation (that is the present paper).

- We also did not find that moving more equations to Appendix would help digesting the paper. Such move would certainly make it easier to go through the Section 2 of the paper, but it also would divert the attention of the reader from some important aspects of the methodological discussion given in the paper.

- We agree with the reviewer that the size and probably the level of formalization of the emethodological Section 2 reduces readability of the paper. In order to address this issue we have included in the Section 2 some clarifications of the proposed methodological concept, and more importantly, we have added several diagrams (Figs. (3-7))

ACPD

7, S3022–S3024, 2007

that are illustrating main logical concepts. We expect that should be helpful for reading the methodological discussion given in the paper.

4. We have corrected and clarified Eqs. (5) and (57a-b). We also have added the explanations and clarifications for these equations as suggested by the reviewer.

5. Following detailed reviewer comments we added many clarifications and explanation in description of the numerical tests (Section 3.1) and the inversion of the MODIS data (Section 3.2).

6. We have added Fig. 26 illustrating the desert dust and sea salt sources assumed in GOCART model. This figure was missing.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 3629, 2007.