**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on "Simulation study of the aerosol information content in OMI spectral reflectance measurements" *by* B. Veihelmann et al.

B. Veihelmann et al.

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We would like to thank the reviewer for his effort to carefully go through the manuscript and for his comments. All issues raised by the reviewer have been accounted for in the revision of the manuscript.

Main comments:

1. Abstract

The reviewer finds the abstract not informative. The abstract has been modified in order to clarify a) what OMI is b) the aerosol algorithm and the bands used c) the dependence of the information content and d) what was learned from the present study.

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2. Introduction

a) The reviewer has the impression that the aerosol retrieval algorithms mentioned have been used in the present study. We have added a sentence clarifying the both algorithms are run on an operational basis on OMI measurements, and that a global aerosol data set produced with the near-UV algorithm is available on the NASA web-server (the Data and Information Services Center of the NASA-GSFC Earth Sciences http://disc.gsfc.nasa.gov/Aura/OMI). The data set from the multi-wavelength algorithm will be made available via a KNMI website.

b) The reviewer asks for a clarification of the methodology, especially concerning the use of synthetic data. A paragraph has been added to the introduction highlighting the limitations of the aerosol retrieval and the purpose of the PCA in this context. We have clarified that a basic assumption in this study is that the parameter ranges of the aerosol models used in the PCA cover the natural variability of atmospheric aerosol. The number of DFS obtained from the PCA is hence assumed to be representative for the number of aerosol parameters that can be retrieved independently from OMI reflectance measurements

c) The reviewer questions why clouds are taken into account in the present study. We have added a clarification in the introduction: The presence of undetected clouds cannot be excluded completely and is a possible source of errors in the aerosol retrieval scheme. Cloud models (ice clouds and water clouds) are included in the analysis in order to investigate whether the spectral information used in the multi-wavelength algorithm can be used to distinguish clouds from aerosols and how the algorithm behaves when clouds are present.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 1785, 2007.

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