**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on "Evaluation of the MERIS aerosol product over land with AERONET" *by* J. Vidot et al.

Anonymous Referee #3

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Review of " Evaluation of the MERIS aerosol product over land with AERONET " by Vidot and co-workers.

General comments

The paper is about the retrieval of aerosol optical properties over land surfaces from the Medium Resolution Imaging Spectroradiometer (MERIS) aboard ENVISAT. Very few comprehensive aerosol satellite data set exits over land while it is extremely important for anthropogenic aerosol monitoring. This is because the retrieval of aerosol properties over land in the visible spectrum is highly challenging due to the surface reflectance. The authors put some efforts to validate the MERIS aerosol products over land and propose new approaches to improve the retrievals.

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Interactive Discussion

Discussion Paper

My main general comment is that the paper is confusing because of the 2 versions of the retrieval algorithm. You should clearly indicate what is the improvement when you take the 2nd algorithm compared to the 1st algorithm and clearly indicate was is due to the land surface uncertainty and is what is due to the aerosol model uncertainty.

Specific comments

Please provide the percentage of DDV and LARS pixels within each biome that you use.

There is a huge discrepancy between the numbers of points in each biome. I think that a regression with only 3 or 4 points is not relevant compare to the one more than 100 points. You should put an effort to harmonize your data set.

You have applied a filter based on the spatial inhomogeneity with a threshold of 0.15. It should be clearly explain in the conclusion how much this filter impacts the validation and if any given user has to applied this filter before using the data.

In the conclusion, clearly indicate if using LARS pixels decrease the accuracy of the product and which version of the algorithm is the most appropriate.

Most of the aerosol remote sensing algorithms are now based on a set of aerosol models composed of one or two lognormal size distribution. It will be very interesting if you can compare the IOPA models with equivalent bi-modal size distribution models given in previously published work over land (MODIS, POLDER, others).

Technical corrections

The paper is well written and the quality of the plots is satisfactory.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 3721, 2008.