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

J. Vidot et al.

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An algorithm is a trade off between best physical approaches you can use and the operational constrains.

The operational constrains are to leave the algorithm as it is (or to make minor changes) and to play only with the LUTs for aerosols and for the surface. For aerosols, the Junge size distribution was selected at the beginning (more than 10 years ago) simply because of the absence of spectral dependence of the phase matrix, that simplified the algorithm and the calculation of LUTs of aerosol optical properties. What we expect from this simplified model is to correctly describe the aerosol optical properties. If not, and that is the role of the new aerosol models IOPA, we replace the LUTs by other aerosol optical properties as far as the phase matrix does not vary much between the blue and the red. For the surface, the reflectance was initially chosen to be constant for

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selected DDV pixels. For LARS, it is a minor change with one extra parameter (slope of surface reflectance versus ARVI).

The physical approaches have been improved by (i) using the IOPA models for the description of the aerosol optical properties, and (ii) using the MODIS land albedo for the description of the surface reflectance. At present, there is no MERIS land albedo product with of course a better spectra matching, but this product is under construction and will be use next. As proposed by the referee, using a more sophisticated aerosol model (fine mode and coarse mode) is certainly relevant but first, need substantial changes in the algorithm and second, will not change drastically the aerosol product (aerosol optical thickness in the blue and ngstrom coefficient). Furthermore, it is possible to use the standard aerosol product to interpret it in a bi modal approach.

The goal of the paper was not to develop a new algorithmic approach but it was an attempt to go further than a simple comparison between MERIS and AERONET aerosol optical thicknesses in order to evaluate the two historical MERIS algorithms and to make recommendations. The recommendation is clear; we have to improve the surface albedo ion the red. Then, we can see what aerosol model is the best.

The comparison between the two algorithms is tricky. DDV certainly may give a better aerosol product (because the description of the surface contribution is simpler) but the spatial coverage with the LARS is better. The final objective is to produce level 3 aerosols and LARS is required at least for MERIS which presents a higher revisiting time at equator than MODIS or SeaWiFS.

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