

Interactive comment on “Assessment of the MODIS Collections C005 and C004 aerosol optical depth products over the Mediterranean basin” by C. D. Papadimas et al.

Anonymous Referee #1

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Authors of the present manuscript have compared the MODIS C005 (second-generation MODIS aerosol product) and C004 (old products) aerosol optical depth with the ground-based AERONET measurements for the greater Mediterranean basin. Authors have used MODIS Level-3 daily data in the comparison which is available on a 1 degree by 1 degree spatial resolution. These data are derived from MODIS Level-2 aerosol retrieval which is available at a spatial resolution of 10 km at nadir. The number of studies I have come across that attempt to validate the MODIS aerosol retrieval over land and ocean have used MODIS Level-2 aerosol data on a spatial resolution of 10 km at nadir. Since aerosols exhibit high spatial and temporal variations, averaging MODIS-derived aerosol optical depth on a 1 degree by 1 degree grid box may

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lose the detail spatial structure of aerosols which in turn may affect the statistics of the comparison with the AERONET data. Authors should use MODIS Level-2 data and a spatio-temporal window technique described by Ichoku et al., 2002, which most authors have used to validate the MODIS aerosol retrieval against ground-based measurements.

Authors have compared the aerosol optical depth averaged in a grid box of size 5 degree by 5 degree (approximately 500 km by 500 km area) with the daily-averaged AERONET data for each site. This is too big area to compare with a point measurement by AERONET sunphotometer. This is my major concern about this paper. I expect that authors should carry out above exercise (Level-2 MODIS data comparison) at least for a few important sites out of 29 AERONET sites referred in this paper, and show that the overall results and conclusion reported in this paper remain same in the case of Level-2 data comparison.

Otherwise, the results reported in this paper are important in quantifying the errors/improvement involved in the MODIS aerosol retrieval and particularly useful for the aerosol remote sensing community. The improvement in the MODIS C005 aerosol optical depth over MODIS C004 have been also reported by the other authors and results of this paper are consistent with these findings.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 16891, 2008.

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