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Interactive comment on “The regime of aerosol asymmetry parameter over Europe, Mediterranean and Middle East based on MODIS satellite data: evaluation against surface AERONET measurements” by M. B. Korras-Carraca et al.

Anonymous Referee #1

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Review of "The regime of aerosol asymmetry parameter over Europe, Mediterranean and middle East based on MODIS satellite data: Evaluation against surface AERONET measurements" by M.B. Korras-Carraca and co-workers.

The paper presents a short analysis of the aerosol asymmetry parameter derived from the MODIS radiometer on TERRA and AQUA satellites. The authors focus on some specific areas of the world: North Africa, Europe and the Middle East. They use the collection 5 of MODIS atmospheric products. The asymmetry parameter is retrieved

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only over ocean surfaces. The paper presents a validation of the MODIS asymmetry parameter with AERONET retrievals. The seasonal and interannual variability for each area is discussed.

Major remarks:

- The introduction is not appropriate. You should introduce the asymmetry parameter in a more general way including its definition and how it depends on the aerosol physical and chemical properties. I would like to have a more qualitative (scientific) presentation of the optical properties you are studying. Avoid awkward sentences like “AOD (...) provides a good measure of the aerosol load over an area”.
- A presentation of the retrieval algorithm should be given in details (method, aerosol models used, accuracy. ...) because you use a parameter that is not the result of the inversion procedure but is rather a by-product of the inversion.
- The reason why you analyze the data only over a part of the world is unclear. MODIS data are global, AERONET data are global and the paper could be global.
- The validation exercise is not convincing. You have a small range of asymmetry parameter and a linear model is not appropriate.
- The difference between AQUA and TERRA platforms as well as the long-term analysis should include the calibration and inter-calibration issues (see Short Comment).
- Finally, the analysis of the asymmetry parameter alone doesn't provide a lot of information on the aerosol impact on radiation. The paper will be greatly improved by putting the study in a more general context including optical and microphysical properties of atmospheric aerosols.

For those reasons, I don't recommend the publication of the paper in its current form but I encourage the authors to propose a new document.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 22677, 2014.

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