Interactive comment on "Comparative Analysis of MODIS, MISR and AERONET Climatology over the Middle East and North Africa" *by* Ashraf Farahat

Anonymous Referee #1

The author presents an analysis of collocated MISR and MODIS satellite AOD retrieval data over seven AERONET sites for a 16-year period. These sites are located in or next to the desert regions of North Africa and the Middle East, hence many (but not all) of these sites have aerosol conditions dominated by desert dust. It is a straightforward study, which seeks to analyse the behaviour of the various AOD products with respect to each other.

The histograms in figures 6-12 are the most useful depiction here of the collocated datasets, displaying the distributions of AOD values over the various AERONET sites as retrieved by AERONET and the satellite products. It is interesting that the MISR AOD retrieval does not appear to capture the very low AODs observed by AERONET. However the trend analysis provides a rather weak discussion and conclusion, only

hinting at significant values for the Solar Village site with AERONET and MISR, as far as I can see from the figure.

I noticed the short comment by Andrew Sayer (I usually try to avoid reading other reviews in discussion journals, but as a comment on data versions this seemed to be a particularly relevant point), and I agree that it is vital that the most up-to-date data versions are used for all three of the datasets. If the current versions are not used then the analysis in this paper is of only minimal historical interest. Therefore please make sure that you are using the new Version 3 AERONET products, for example. I do not know how much difference to the results re-performing the analysis will cause, but presumably there will be differences in almost all of the figures and tables.

Please also clarify whether you are using the Dark Target (DT) and/or the Deep Blue (DB) AOD retrievals, since these use very different retrieval methods, and it is a vital distinction to make. Presumably the MODIS AODs over central desert sites such as Solar Village or Tamanrasset would be from the Deep Blue algorithm, while coastal sites such as Bahrain would have a greater prevalence of DT retrievals. It would per-haps make more sense to discriminate the MODIS AODs further, between retrievals using the DT and the DB algorithms. A possible question might be whether the DB or the DT algorithm performs better in the vicinity of Bahrain or other such sites on the desert margins?

Throughout the manuscript there are language issues which should be corrected.

Specific Comments

p.2, lines 36-37: why is this in italics?

Section 2.2: if MODIS Deep Blue retrievals are used (and they should be), please also describe them here.

p.14, line 330: do you know what these peaks indicate? On brief speculation I might imagine that the first peak is indicative of industrial aerosol and the second peak might

be indicative of dust. Ångström coefficient values may give some evidence as to what these might be.

p.14, lines 337-338: if the MODIS retrievals are preferentially coming from the Gulf, does that mean that the great majority of the retrievals over Bahrain are from DT?

p.14, line 253: 'topology'. I think you mean 'topography'?

Figure 4(b): I thought Cairo only had AERONET data from 2005-2007?

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