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Atmospheric Chemistry and Physics Discussions

# *Interactive comment on* "An overview of regional and local characteristics of aerosols in South Africa using satellite, ground, and modeling data" *by* S. P. Hersey et al.

**Anonymous Referee #2**

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Review report on " An overview of regional and local characteristics of aerosols in South Africa using satellite, ground, and modeling data" The authors present an overview of particulate air quality across some areas of areas of South Africa using satellite and ground-based data. The authors built their conclusion on level 3 data which is coarser than level 2 data. So primarily I suggest using level 2 data which has better resolution and average data on about 75-100 km and compare the results. Also the results and discussion section needs to be improved as it too many details from literature and sometimes discussions are not in concurrent with figures. Accordingly I suggest that the manuscript can be published with major correction. Here are some



points which are needed to be fixed. Page 24702 Line 8, do you mean AOD from MODIS Aqua and Terra ?, please clarify Page 24702 Line 9, the same for Ängström Exponent do you mean MODIS Aqua and Terra? Please clarify Page 24702 Line 25, too much details, I would place put the sites description somewhere else rather than abstract Page 24702 Line 28, the statement "PM10 concentrations in. . .. . ." is too long and not clear. Split it and make it clear Page 24703 Line 11 instead of "– and underscore" change it to "which reflects.." Page 24703 Line 13, make this statement shorter as it is too long" These results from the urban/industrial Gauteng area quantitatively conïňĄrm . . .", summarize. In general the abstract is too long and has many details that should be removed, I suggest rewrite the abstract in a more proper way. Please identify the objective of research at the end of introduction section I a clear way. Page 24707 Line 27, please rephrase "MODIS data included daily. . .", it has something missing..I Page 24708 Line 4 The same of "Data from MISR included.." it has something missing, rephrase. Page 24707 Line 27, why data till 2009?, Giovanni has aerosol MODIS data till Dec 1 , 2014. Page 24708 Line 10 , what is the source of GOCART data? Page 24708 Line 18, please provide the URL of FIRMS data that you used in the study. Page 24710 Line 14, add "there" after "In every region" In the Results and discussion section, I do not understand why long introduction about Aerosol Optical Depth and other parameters, it looks like text book. I think that it should be shorter and cited to references if anybody wants to get more details. Also I suggest just start discussing the results and in the interpretation part you can use literature for discussion. Page 24712 Line 25, here you are talking about correlation, Is not shown? Why there are no correlation plots. Page 24713 Line 25, If you want to discuss Figure 2 after Figure 3, why you do not switch them? I noticed that sometimes you write Fig. and sometimes it is Figure, please unify Page 24715 Line 9, Are you here talking about Figure 4? If yes please refer to it. Page 24725 Line 17, what do you mean by Terra and MISR? Terra is the satellite and MISR is the instrument. Where are the correlation plots of water vapor with aerosol parameters? You mentioned that spatial resolution of satellite data is a factor that prohibits satellite data to capture trends in ground PM concentration, so

why do you not try level 2? , level 2 data has much better resolution than level 3 that you used in this study.

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Interactive comment on Atmos. Chem. Phys. Discuss., 14, 24701, 2014.