

Interactive comment on “Middle East versus Saharan dust extinction-to-backscatter ratios” by A. Nisantzi et al.

Anonymous Referee #2

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In the presented work the lidar ratio of Saharan dust and Middle East dust is systematically analyzed based on a four year period of co-located lidar and sun-photometer measurements. The investigation of dust lidar ratio is important, as it is an important quantity and key parameter for the evaluation of elastic backscatter lidars. Although there are many studies about Saharan dust lidar ratios, reported lidar ratios for Middle East dust are rare. Therefore I recommend publication in ACP after consideration of few minor comments:

Page 5209, line 24: Please give the references for the assumed lidar ratio of 20 sr for marine aerosols and 50 sr for urban haze.

Page 5209, line 25: What does a PBL AOT contribution of 0.03 mean? What is the

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total (mean) AOD? What do you assume for the lowermost 350 m?

Page 5210, lines 4-9: A Figure including the mean trajectories for a dust cases would be nice.

Page 5210, line 20: If the depolarization ratio (particle or volume?) was still high in the PBL, did you adjust the used lidar ratio in the PBL?

Page 5211, line 7: Please give a reference for the use of 0.05 for non-dust particles and 0.31 for dust particles.

Page 5214, line 16: Change 'Fig. 6' to 'Fig. 5'.

Page 5216, line 18: Do you mean aged European aerosol or pollution?

Page 5216, line 19: Is the assumption of 'polluted maritime' really justified?

Figure5-8: Please give error bars.

General comment: Maybe a separated consideration of the cases with high dust load and low uncertainties and of the cases with low dust load and high uncertainties for the calculation of the mean Saharan dust and Middle East dust lidar ratios would be reasonable. Or one could calculate the weighted mean taking the uncertainties of the contributing values into account.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 5203, 2015.

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