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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Study of the effect of different type of aerosols on UV-B radiation from measurements during EARLINET" *by* D. S. Balis et al.

D. S. Balis et al.

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Reply to referee 2 comments

First of all we would like to thank the anonymous referee for his comments that helped to clarify many issues in the paper. His/her suggestions have been considered in the revised version of the paper, as follows:

1. A new paragraph on the uncertainty of the method for estimating the SSA has been inserted, including a comment on how sensitive the radiation is in changes of 0.1

2. The points that do not agree with the observations in Figure 2 have been commented in the revised document.

3. The time difference between Brewer and lidar measurements are of the order of an

hour. Actually we used the last UV-spectrum of each day considered, while the lidar measurements were performed at sunset. We assumed that the aerosol conditions remained rather stable during a period of two hours in the late afternoon. However it is true that rapid changes can affect the comparisons. An appropriate comment has been added.

4. There is no physical mechanism. There are just cases measured in the Mediterranean (e.g. the ones mentioned during the PAUR campaigns) where a decrease in total ozone, associated with transport from the extra tropics, is accompanied by substantial increase of the aerosol optical depth, which can mask the expected increase in UV and lead even to a decrease. According to Bruehl and Crutzen (1989) this reduction is enhanced in the presence of high tropospheric ozone. An appropriate sentence has been added in the text.

5. The reviewer is right, we labeled the case Şdust freeŤ.

6. The decryptions of cases 2 and 3 have been improved. See points 10 and 11 of our answer to referee 1

7. A more detailed description of figure 8 has been inserted in the text.

8. We agree with the reviewerŠs comment for the conclusions. This paper suggests that there are strong indications that the combined use of lidar and spectral measurements can increase our ability to characterize the aerosols. Of course there are more measurements and improvements needed and a appropriate comment is included in the conclusions.

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 4671, 2003.