

## ***Interactive comment on “Remote sensing of cirrus clouds and aerosols by a sun photometer in Tunisia” by H. Chtioui et al.***

### **Anonymous Referee #1**

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Remote sensing of cirrus clouds and aerosols by a sun photometer in Tunisia

General comments: In this manuscript, the authors conduct some ground based measurements of solar radiation by using a sun photometer on the selected five key sites in Tunisia, where are not yet covered by routinely operated ground based measurements of solar radiation, during the period of November 2000-February 2002. The work fills some gaps of ground based measurements besides the satellite measurements in North African, although the cirrus clouds are identified by eyes by experimenter and sun aiming of the detector is manually accomplished. In addition, aerosols and cirrus clouds optical thickness are derived from photometric measurements at 532nm wavelength. The analysis of spatial and temporal variability of AOT concludes that most Tunisia aerosols could be from Saharan. Therefore, the presence of Mediterranean

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moisture and Saharan aerosols seems to enhance cirrus and contrails formation, especially in Europe where air traffic is denser than over North Africa. Overall, this study has been carefully done and thoughtfully presented, with clear interpretations of results. The paper is well written and would be published, subject to a few minor corrections and the following clarifications.

Specific comments: 1) P3322 line 2, “have” &#61664; “had”; 2) P3322 line 4, “Three Sites” &#61664; “three sites”; 3) P3322 line 5, “Two” &#61664; “two”; “boarder” &#61664; “border”; 4) P3322 line 21, “Norhern” &#61664; “Northern”; 5) P3323 line 27, “March” &#61664; “February”; 6) P3323 line 3, “Souise” &#61664; “Sousse”; 7) P3323 line 5, “boarder” &#61664; “border”; 8) P3323 line 10, “d’optique atmosphérique” &#61664; “d’Optique Atmosphérique”; 9) P3324 line 12, “manually” &#61664; “manually”; 10) P3324 line 14, “F3(850 nm) F4(940 nm)” &#61664; “F3(850 nm), F4(940 nm)”; 11) P3325 line 4, d is defined as the earth-sun distance on the measurement day; P3325 lines 20-22, P3330 table 1&#65292;d is used as the number of measurement days. I don’t think that the same character should be defined as two variables in a paper; 12) In P3322 line 8, P3323 line 14, “AOT” is abbr. of “Aerosols and Cirrus Optical Thickness”, but in P3325 line 16 is “Atmospheric Optical Thickness”. I think it should be revised 13) P3326 line 4-7, the maximum AOT during March-April-May period seems to be 0.49 from Table 2, the real maximum AOT (=0.6) seems to occur in November 2000 at Sousse site. Please check their rationality carefully; 14) P3326 line 11, the last “as” seems to be deleted 15) In whole paper, the first character of “mediterranean”, “sahara” and “saharan” should be in capital in all places. 16) P3326 line 26, “antropogenic” &#61664; “anthropogenic”; 17) P3326 line 28, “frequently” &#61664; “frequent”; 18) P3327 line 10, “north african” &#61664; “North African”; 19) P3327 line 12, “boarder” &#61664; “border”; 20) P3330 table 1, “Fabruray” &#61664; “February”; 21) P3334 Fig. 3, “meaditerranean” &#61664; “Mediterranean”, “boarder” &#61664; “border”; 22) P3331 table 2, the number of measurement days d is wrong in the 3rd line of table, which is equal to the sum of CS days, Ae days and Ci days. I do not believe the validity of Mean AOT and Std. By the way, I suggest you explain the method

of average done in the paper, because the measured number of days of  $A_e$  and  $C_i$  are different and different average methods produce different Mean AOT and Std. 23) Fig.2 and Fig.3 should be revised in detail, such as: length of partition line of every month, length of ticks in axis and so on. Additionally, I found some circle marks and square marks in the plot; you should give some special explanation.

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Interactive comment on Atmos. Chem. Phys. Discuss., 6, 3321, 2006.

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