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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Sunphotometry of the 2006–2007 aerosol optical/radiative properties at the Himalayan Nepal Climate Observatory – Pyramid (5079 m a.s.l.)" *by* G. P. Gobbi et al.

Anonymous Referee #1

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General comments: This is a piece of good work of high mountain measurements of aerosol loading through sun-sky photometry. Such measurements are useful for understanding the climate effect of aerosols of global and regional scales, especially that of high mountain region including the effect to the glacier system. The paper can be published with minor changes as suggested below.

Specific comments:

p1195L3: Not only OC but also sulfate aerosol is important.

p1196: Mentioning the high ground surface albedo is good.

General comment for the analysis: Are results meaningful for such small number of data during August-September period? This point should be discussed a little bit in terms of variability of data. Especially the seasonal change in the SSA looks difficult to discuss with such small data sets in the summer season. See the comment for Fig. 6 below.

Fig. 4: Vertical axis does not show the title.

Fig. 4: It is interesting to find the negative-correlation between coarse particle AOD and precipitable water in Fig. 4. Usually the positive correlation is found in other parts of globe.

Fig. 6: It is difficult to find a reason for such small SSA less than 0.4 at EV-K2. SSA cannot be smaller than 0.5, i.e., large-particle limits, with dominant coarse particles shown in Fig. 4. Such small SSA can be only possible when very small particles are dominant. This looks not consistent with Fig. 4 results. The number of data is very small in the summer time as commented above, and the retrieval looks not reliable. Please discuss this issue.

Conclusion: low fine particle SSA less than 0.9 is a good finding, but I feel there is large uncertainty in the finding if they include the summer time SSA. Please discuss this point.

CALIOP AOD vs surface measured AOD will be very useful for readers.

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