

## ***Interactive comment on “Study of columnar aerosol size distribution in Hong Kong” by X. Yang and M. Wenig***

**Anonymous Referee #1**

Received and published: 25 April 2009

major comment:

The data in the study covered the period July to November in a number of years. The meteorological conditions in July to September and those of October to November could be quite different. The former is more the more humid summer with southerly airflow. The later is drier autumn with continental, northeast monsoon. Even in the summer time, the effect of tropical cyclones on the air mass could be significant and high AOD days could occur in northerly winds associated with tropical cyclones, when the air could be rather dry. As a first step of the analysis of the AOD data, the paper could be accepted as it is. But the authors are encouraged to carry out further study in the future to distinguish between maritime and continental airstream conditions, by referring to the prevailing wind direction and the RH in Hong Kong. The authors are

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encouraged to mention this approach to further study (and thus limitation of the present study) in the present paper.

minor comments:

(a) Section 2.2, second paragraph: about the modified Langley method - any reference? Is it sufficient to determine the calibration constant for the instrument every year? What's the recommendation from the instrument manufacturer? (b) Section 3.1, second paragraph: the use of daily mean AOD for comparison with MODIS AOD sounds a little bit odd. Any data to support the use of daily mean AOD instead of the AOD near the satellite overpass time? What would the comparison result become when AOD at satellite overpass time is considered? Moreover, at the end of the paragraph, it has been mentioned about the single pixel vs. mean pixel. Glad to see the single pixel AOD - instrument AOD comparison as well. (c) Section 3.1, third paragraph: for the benefit of the readers, please mention that the instrument - AERONET comparison in October to November only covers the drier season. The authors may like to include some meteorological parameters in this period, such as prevailing wind and RH, to illustrate the limitation of the comparison. (d) Section 3.3, fifth paragraph: as said in the major comment, there could be significant variation of the RH in the study period of July to November. Better to present a table showing the RH variation in the study period to support that hygroscopic growth of aerosol is a major factor.

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 8341, 2009.

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