

## ***Interactive comment on “Airborne dust distributions over the Tibetan Plateau and surrounding areas derived from the first year of CALIPSO lidar observations” by Zhaoyan Liu et al.***

### **Anonymous Referee #2**

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This paper presents a mostly descriptive study of dust transport over the Tibetan Plateau (TP). It introduces a useful approach of utilizing the possibilities of the new CALIPSO instrument, and it contains some useful statistics (which., however, could be presented more clearly).

Specific comments:

Page 5959, lines9-11: This is not necessarily true. The authors relate the observed warming in the TP to the possibility of positive radiative forcing by dust. This would, however, imply increased dust transport over this area in the past decades, for which they do not give evidence. Also, even positive forcing at TOA may be accompanied by

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negative surface forcing by dust.

In the introduction the aerosol absorption is pointed out as critical factor for the dynamical effects of aerosols. While here the presence and absence of dust particles is derived from CALPSO measurements, this does not provide information on the absorption properties. Some suggestions on how to approach this knowledge gap for the region would be helpful.

Section 2: Please explain the term ‘attenuated backscatter’; for the non-expert reader

Page 5965: Differences in the vertical extent of dust plumes from Gobi and the Tarim Basin area would be interesting and should be pointed out from the CALIPSO data, if possible.

Figure 3, page 5966: The results that are presented in Figure 3 would be more useful if they were additionally presented in table format (e.g. with information on percent occurrence, per month for the different heights, for the eastern and western parts of the TP)

Page 5967, line 14: The influence of the Gobi desert on dust present in the TP appears to be very minor (which makes sense as the dust transport here is dominantly in eastward direction) . This should be emphasized in the text.

Page 5969, line 15: The look at the figures alone does not support the conclusion that the Tarim Basin is a more prolific dust source compared to the Gobi desert (however, it is of greater importance for the TP). This statement should be supported by actual numbers.

Figure 2: The map of the area would be more useful if the boundaries of the deserts would be indicated.

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 5957, 2008.

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