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Atmospheric Measurement Techniques Discussions

Interactive comment on "An experimental study on light scattering matrices for Chinese loess dust with different particle size distributions" *by* Jia Liu et al.

Anonymous Referee #6

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General Comments: The manuscript by Liu et al. presents results from the light scattering matrices for the samples collected from Chinese Loess Plateau. Auxiliary analyses including particle size distribution, refractive index, chemical component, and microscopic appearance etc. were also done. Based on their results, the authors conclude that the size distribution play a major role in leading to different matrices. In general, the method developed by the authors is novel and fits the slope of the journal. However, some modifications are necessary before it can be considered for publication. One major comment is that the authors did not discuss the atmospheric implications of this novel method. The authors mentioned that the average scattering matrix changed due to the updated sample "pristine loess" compared to previous studies (Fig. 6), this

is very interesting, but how meaningful this is to the atmospheric aerosols study? How accurate will it be if we use this new average scattering matrix in future studies? Also, it is necessary for the authors to ask a native English speaker to review the article.

Specific comments:

Pg4, line 100: Figure 1: What is the meaning of r in y-axis? Please explain in the figure caption.

Pg6, Fig. 3 is not so clear. Please draw a schematic of the experimental setup.

Pg6, line 155: How do you inject the dust aerosols into the setup? Please clarify.

Pg8, line 222: The last sentence "while other. . ." is not clear.

Pg11, line 313-314: The authors should indicate what are these small "milled loess" compared to.

Pg10-11, In the conclusion section, the authors should explicitly explain what is "novel" in the new average scattering matrix compared to their previous study, and the significance of this study.

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