Public justification (visible to the public if the article is accepted and published):

Please find the minor suggestions by the reviewer.

It is recommended that the author discuss in more detail why the aerosol parameters of CALIOPare used, only the geometric mean particle size is changed, and why the geometric standard deviation is not changed. If the authors agree with the aerosol type of CALIOP, there is no need to change the geometric mean particle size. If the authors disagree, other parameters should also be changed. Since the aerosol type parameters of CALIOP were calculated statistically, the author should not assume that the other parameters are fixed and change only one particular parameter. Please justify the choice of parameters.

Additional private note (visible to authors and reviewers only):

Please find the minor suggestions by the reviewer.

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Response: We thank the reminder of editor very much and we are sorry for the

confusion. On the one hand, the effective radius is an important parameter indicating particle size distribution, and have been widely considered in the remote sensing of aerosols (Veselovskii et al., 2002; Di Girolamo et al., 2022). On the other hand, the refractive index and geometric standard deviation of the six aerosol types are used in establishing our look-up talbe, which is consistent with the aerosol classification used in the operational algorithm of CALIOP (Winker et al., 2009). r_0 is the median radius of aerosol size distribution in Eq.13, while the geometric mean particle size is not concerned in our manuscript. We have added the references in Line 140, and modified the effective radius from $\bar{r}$ to r_e in manuscript accoedingly.

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