

Dear Editor,

We appreciate your comments. We have included as much as possible our responses to the reviewers to improve the manuscript as you suggested and provide point-to-point responses below.

Ref. #1:

The response to the first question on the model assumption has been included in the revised ms.

Ref. #2:

The concern of the reviewer on the variable size distribution for retrievals has been included in the revised ms.

The point of the no-volcanic eruption simulation of CARMA has been included in the revised ms.

The straylight concern has been also included in the revised ms.

We have switched extinction symbol E to symbol k . In order to avoid confusion, we have also switched iteration number symbol k in Eq. 3 to n .

Ref. #3:

The responses to point 5 and 7 have been used in the revised ms.

Kind regards,

On behalf of the co-authors

Zhong Chen