We are endebted to the Reviewers for their valuable feedback. The resulting revisions to the manuscript are described below.

REVIEWER 3:

the work currently lacks sufficient physical intuition. To ensure the paper is accessible to a broader scientific audience, a major revision is required. This should include a more a concise plain-language summary, and detailed definitions of all variables.

Response to comments:

We have re-organized our paper into Introduction, Methods, Results, and Conclusions. We have performed extensive additional accuracy and timing studies which are now discussed in the Results section. We have added additional discussions on meteorological concerns, including clouds, snow and ice.

Reviewer comment:

Readability of the text could be improved by defining and giving more explanation on commonly used terms like the single scatter albedo (ω), the asymmetry parameter (g), and the extinction path length (σ).

Response to comments:

Material has been added as part of the re-organization to address this.

Reviewer comment:

To align the paper with the journal's scope, the author should look at more real-world uses than just pigments. It would be helpful to mention which specific research communities could use this algorithm. It will really help to specify which particles (like ice crystals or dust) cause the heavy forward and backward scattering mentioned, and what physical rules make that happen.

Response to comments:

After further investigation we became aware that the case of strong backscatter is likely not as common as we initially thought. We have revised the paper to reflect this reality. There are

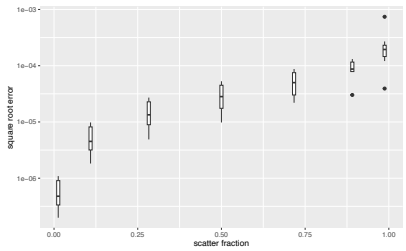
materials including snow and ice that have a significant backscattering component that can be easily fitted to a mesh approximation. These systems are poorly described using current tools, (and the accuracy study in our paper suggests that EigenFlux has an advantage for strongly forward scattering systems as well). We have added additional discussions on clouds, snow and ice.

Reviewer comment:

Clarify more on the model's limitations in absorptive conditions and define the specific scenarios (how does a model fail if the particles are absorptive) where the algorithm is most reliable

Response to comments:

Accuracy can degrade as a result of low absorbency. The following figure (Figure 13) has been added to the paper.



Reviewer comment:

The figure captions are extremely concise and should include more explanation to help readers understand the figures more easily.

Response to comments:

The figure captions have been expanded to provide more explanation to the readers.

Reviewer comment:

Include error metrics, uncertainties and a conclusion section to effectively summarize the work.

Response to comments:

A new subsection on “Accuracy and Timing Studies” is now part of the “Results” section, and a “Conclusions” section has been added.