We thank anonymous referee #2 for reviewing the manuscript and providing corrections and suggestions. Following are our point-by-point replies with the referee comments in italic. Page and line numbers refer to the marked-up revised manuscript, to be provided as a final response.

Figures 6 and 11 show phase functions at intervals of angles of cloud bow and glory. It is seen that the phase functions are very sensitive to the effective size and to the effective variance. The reflectance of a cloud as measured from satellite at the top-of-atmosphere should be less sensitive because of multiple scattering. It would be instructive to provide figures of angular dependence of the reflectance as additional figures along with Figs 6 and 11. Additional figures can be done for one typical value of the cloud optical thickness, say 8, using the LUTs created by the authors. One observation geometry, say MSG-3 and the region west of the African coast, will be enough. Some of the Sun-satellite geometry angles can be constant and correspond to the case of March 7, 2017. The geometry angles should vary so that the intervals of scattering angles correspond to the intervals angles of Figs 6 and 11.

The analysis proposed by the reviewer was included in our results (page 14, lines 2-12). We have selected the southeastern Atlantic region and the MSG-1 observation geometry, whereby both cloud bow and glory effects are apparent in the reflectances (Figs. 4c and 4e), during the same day (March 7, 2017). For each time slot, the viewing and illumination geometry and the effective radius were those calculated from the spatial averages of the actual retrievals, while three values of cloud optical thickness were examined: τ = 1 (very thin cloud), τ = 8 (close to the average retrieved value) and τ = 30 (thick cloud). Using the LUT with v_e = 0.15, we plotted the reflectances in the 0.6 μm channel corresponding to these cases. The results clearly show how an increased τ increases the reflectance measured by the satellite sensor. They also confirm that the cloud glory and cloud bow reflectance magnitudes relative to non-glory and non-bow time slots are not affected by τ, which was already mentioned in the manuscript for the cloud bow case. As Mayer et al. (2004) nicely described it: "The glory structure sits on top of a multiple-scattering background which of course depends on optical thickness".

Figures 12 and 13 show retrievals results for 0.6 μm - 1.6 μm channels and 0.6 μm - 3.9 μm channels separately. There is difference in the retrieved values, especially for the effective size. Sensitivity to the effective variance is seen as well. The authors should discuss how those properties can be used to estimate the effective variance.

Possible ways to estimate the effective variance are discussed in the last paragraph of Sect. 4 in the revised manuscript. They are not based, however, on the differences in retrievals using the two different spectral pairs, as the reviewer suggests. As we discuss in the marine case, where these differences are also present, they should be attributed to the different penetration depth of the 1.6 μm and the 3.9 μm wavelengths (page 19, lines 12-14), and possible shortcomings in the treatment of the 3.9 μm channel (page 21, lines 11-12).

Technical corrections.

Page 3 line 16 Replace Mayer et al. (2015) by Mayer et al. (2004).

Done.

The dotted and dashed lines are hardly distinguished in figures. I would prefer to see straight vertical lines of different color.

We have added letters next to each vertical line, denoting either cloud bow (b) or glory (g).