

Response to Dr. Oo - Reviewer's comments are italicized; response are not.

This paper “Critical evaluation of cloud contamination in the MISR aerosol products using MODIS cloud masking products” provides the assessment of cloud contamination on MISR aerosol products using MODIS cloud masking products. This paper also notes that the MODIS cloud mask (which includes IR channels that is not available on MISR) can be applied to assist cloud clearing of MISR aerosol retrievals. This method combining multiple sensors is useful and could be used for future improvement of the MISR aerosol product. Overall this manuscript is generally well written and easy to understand and it should be published in AMT.

We thank Dr. Oo for his suggestions and comments.

Comment 1: *In Figure 2, the fractional data density illustrated in the color contours is very confusing. What is the period of data in Figure 2? Is that figure plotted with one year's data (2007) or case study data?*

Answer: We created Figure 2 using one year of collocated MODIS and MISR data (2007). To avoid confusion, we have rewritten the discussions as following.

“Shown in Fig. 2 are the means and data distributions of MISR AOD values as functions of F_{cd} , F_{uc} , F_{pc} , and F_{cc} for both the over-water (Fig. 2a to d) and over-land (Fig. 2e to h) cases using collocated MISR AOD and MODIS cloud mask data for 2007, with the fractional data density illustrated in color contours for every 10% of a given fraction. The fractional data density is the contour of the number of pixels for every 0.02 MISR AOD and every 10% cloud fraction over the total number of pixels within the corresponding 10% cloud fraction.”

Comment 2: *In both Table 1 and 2, the RMS and MAE of $F_{cc}>20\%$, $F_{cc}>50\%$ and $F_{cc}>80\%$ filtering alone should be included. Table 2, the RMSE and MAE over land show minimal improvement (Self-QAed vs Thin cirrus filter: RMSE = 0.143 vs 0.143 and MAE = 0.072 vs 0.070) in filtering with a thin cirrus cloud filter, which should be mentioned/explained. This may be because of MODIS cirrus cloud mask is not sensitive to cirrus cloud in certain circumstances (for example, $COD<0.3$).*

Answer: The RMSE and MAE values of the $F_{cc}>20\%$, $F_{cc}>50\%$ and $F_{cc}>80\%$ filtering steps were included in Table 1s and 2. We also added the following discussions in the text.

“The RMSE and MAE values have insignificant changes after using the thin cirrus filter for the over land case. It may be possible that MODIS cirrus cloud mask is not sensitive to cirrus clouds in certain circumstances (for example, $COD < 0.3$) (Sassen and Cho, 1992).”

Comment 3: *In Fig. 3 (e) and (f), and Fig. 4 (d), over North Africa, there are some positive biases after filtering with MODIS cloud mask. The authors should explain these biases.*

Answer: Over the North African region, positive biases are found. The positive biases are introduced for two reasons: (1) the averaged AOD values are high over the region, and (2) some of the retrievals with AOD values less than 0.2 are removed by the MODIS cloud mask filtering, thus reducing the averaged AOD values. We have added the following discussions in the text:

“Over the North African region, positive biases are found (Fig. 3e and f). The positive biases are introduced for two reasons: (1) the averaged AOD values are high over the region, and (2) some of the retrievals with AOD values less than 0.2 are removed by the MODIS cloud mask filtering, thus reducing the averaged AOD values.”