Response to Review 1
We thank the reviewer for his/her thoughtful comments.

Question: *This paper is very good, and the results obtained will be extremely useful for any type of aerosol research based on MODIS data, especially for assimilation. I find it hard to find anything to comment on. I just have one philosophical question on the dependency of the bias of MODIS AODs < 0:2 on surface wind speed: since a fixed value is used in the MODIS retrieval (ut =6 m/s), I would not expect a linear dependency of the bias on that parameter, especially an increase of AOD with increasing wind speed, which the regression results point to. In fact, considering how surface wind speed is used to parameterize sea-salt emissions (which for the sake of argument we can use as a proxy for low AODs over ocean), and how that relationship is far from linear, I would almost expect a "bimodal" relationship in which for actual surface wind speed > ut, the MODIS product underestimates the actual AOD, while for (actual) surface wind < ut the MODIS AOD overestimates it. Perhaps the linear behavior found by the authors has to be ascribed to the way the MODIS retrieval is set-up and the prescribed dependency on the (fixed) wind speed. Can the authors shed some light on this?*

Answer: Agreed. Both our data at high wind speed range and our previous studies (Zhang and Reid, 2006) showed a non-linear relationship between retrieval error and wind speed. However, this part is not included in the paper, and we are surprised that the reviewer knows the details.
Ideally, we would expect an overestimation for *wind < ut* , and an underestimation for *wind > ut*. Note the 6m/s (*ut*) near surface wind speed represents the global averaged value. However, the averaged AOD difference between AERONET and MODIS at wind speed of 6 m/s is -0.02, instead of zero AOD difference as what the reviewer expected. On the other hand, a recent study by Zhang and J. S. Reid, (2010) suggested, using collocated MODIS and AERONET from coastal and island sites and for MODIS AOD < 0.2, that the averaged difference between AERONET and MODIS AOD is on the order of 0.02, possibly due to calibration. We believe that is also a reason why we see a 0.02 AOD shift in the wind speed and retrieval error plot.

Abstract:
Question: *Line 2: Remove "symbol as τ", and define in the body of the article, when needed.*
Answer: Done. We removed "symbol as τ".

Question: *Line 4: Remove "data" after Aqua since it's repeated just afterwards.*
Answer: Done.

Question: *Line 5: Remove "data" before assimilation.*
Answer: Done.

Question: *Line 9: To avoid repetition, replace "quality assurance and empirical correction proce- dures" with "these procedures".*

Answer: Done.

Question: *Line 11: Add "with respect to AERONET data" after "respectively.*
Answer: Done.

Question: *Line 14-15: To improve readability replace ", and will also be useful...their projects." with ", as well as other research based on MODIS products".*
Answer: Done.

Introduction:
Question: *Line 25: After "through the" add "analysis to the"*
Answer: Done.

Question: *Line 8 (page 20241): use "data performance" rather than "data performances"*
Answer: Done.

Question: *Line 9: remove "the" before "functions" and add "the" in front of "main"*
Answer: Done.

Question: *Line 15: replace "operationally used" with "operational"*
Answer: Done.

Section 3:
Question: *Line 19-20 (page 20243): Instead of "Similar excises were...", say "A similar analysis was..."*
Answer: Done.

Question: *Line 27-28: Remove "Also, although" and capitalize "both". Put a period after analysis and start a new sentence with "However, ... "*
Answer: Done.

Question: *Line 5 (page 20244): add "instruments" after "MODIS"*
Answer: Done.

Question: *Line 7: "aerosol retrievals" instead of "aerosol retrieving processes"*
Answer: Done.

Question: *Line 8 (page 20245): replace "is beyond ... discussed" with "their discussion is beyond the scope of this study.*
Answer: Changed to "this is beyond the focus of this study and thus are not discussed".

Section 4.2:
Question: *Line 3 (page 20248): remove "are"*
Answer: Done.

Question: *Line 6 (page 20248): replace "As both" with "Both"*
Answer: Done.

Question: *Line 7: replace with "suggested" with "suggest"*
Answer: Done.

Question: *Line 14: "categorized" instead of "divided"*
Answer: Done.

Question: *Line 27: add "the" before "analysis"*
Answer: Done.

Section 4.3:
Question: *Line 2 (page 20249): add "the" before "empirical corrections"*
Answer: Done.

Question: *Page 20249, bottom: for readability, summarize RMSE values in a table*
Answer: Done. We added table 3 as requested.

Question: *Line 13-14 (page 20251): rephrase from "The cloud contamination...reduced" - the sentence is missing the main verb and hard to read.*
Answer: Done. We change to: "The noise floor values decrease as the percentage of cloud fraction decreases indicating that the cloud-induced uncertainties are reduced for retrievals with less cloudiness."

Section 5:
Question: *Line 19 (page 20252): add "oceans" after "southern".*
Answer: Done.

Question: *Line 20: replace "sources" with "retrievals"*
Answer: Done.