

We would like to thank Reviewer 2 for his useful comments that in particular helped to better define the scope of the present paper. Our detailed response follows with reviewer's comments in bold reminded.

“Content : As stated in the title the article is about the validation of the results of an existing algorithm. However, the only reference is a report (that I found on the web) : Jolivet, D., Ramon, D., Riedi, J., and Roebeling, R.: Aerosol retrievals from METEOSAT-8, SAF on Climate Monitoring, Visiting Scientist Report, 2006. 3158, 3159 that gives less detail on the method than the presented article. I would like to see a better reference (if it exists) or some more elaboration on the used methodology and maybe a scope change of the article effectively changing the title to: Description and validation of an AOT product over land at the 0.6 μm channel of the SEVIRI sensor onboard MSG”

We agree that the title did not reflect completely the scope of our present paper.

In fact, as also noted by reviewer 1, this paper is intended at documenting a product that is currently operationally produced within the ICARE data and services center and will be shortly release to the public. However, because the current version still has some limitations, those need to be documented before a first release to the public can be made. This is necessary so that the product can be advertised and used quickly by users for what it can provide at this stage and at the same not be overestimated or misused by lack of information. This is particularly important and useful to the users who will start comparing the SEVIRI product to other publicly available dataset.

Clearly, the current version of the product will be followed by significant upgrades in the median term. So we made the choice to focus here on evaluating and documenting the quality of the currently available product, leaving for a next publication to provide a more thorough description of the full methodology when the improved algorithm is implemented in production and a second generation of product is made available.

Also, because the methodology is not completely new as noted by reviewer 1 and feasibility studies have been performed previously and documented for GOES and SEVIRI, we think it is of greater interest to focus here on the currently available product quality. Still, the current paper provides a rapid description of the algorithm implementation which we have tried to improve to better explain in particular how the aerosol model is selected. We also added a new reference to a proceedings previously published which contains information on the algorithm itself.

Bernard E., Ramon D., Jolivet D., Moulin C., Riedi J., Deschamps P.-Y., Nicolas J.-M. and Hagolle O., 2009, *Aerosol retrieval over land in the 635nm channel of MSG/SEVIRI sensor : a hourly and daily AOT product above Europe*, in Proceedings of the Eumetsat Meteorological Satellite Conference, Bath, Sept. 2009

Finally, we agree that the proposed title could better reflect the scope of this paper and so we changed it to be **“Description and validation of an AOT product over land at the 0.6 μm channel of the SEVIRI sensor onboard MSG”** as suggested by Reviewer 2.

Validation : The validation exercise done is excellent but due to the limited temporal and spatial information is not enough to extend to the whole SEVIRI field of view.

We have currently focused the validation to the area where we think the product can be used and provides meaningful and quantitative value in its present state so that users are not tempted to misinterpret our results elsewhere. Current development are being made and validated to extend further the product to the full SEVIRI disk but won't be publicly available shortly so we decided to document and deliver what we think is useful for the community at this stage of our developments.

Regarding the temporal extend of the dataset, we were constrained by practical consideration for the

validation exercise. However, we do not anticipate major differences at other seasons in the quality of our product because the main current limitation that is season dependent is linked to rapid changes of surface reflectance which tend to occur in Spring at vegetation growth. Since March and April have been used in our present study we do not feel necessary to extend the validation to other season in the present paper but agree that a validation exercise of the future improved product could, for the sake of completeness, include such seasonal analysis.

Since the beginning of the preparation of this paper, several years of SEVIRI level 0 data have been processed. We could probably re-oriented our paper to a most important period of validation and to more stations that it is presented but this would require more time to re-write some paragraphs and insert some more figures. Again, we have decided to release our product rapidly to the community and prefer to provide this current evaluation shortly so that the product can be used under reasonable conditions.

Cloud masking : As the authors point out that the cloud mask is the biggest source of errors and that they use a simple method for cloud masking one might ask the question why they do not use an external cloud mask of high quality as an input for the algorithm (e.g. the MSG cloud mask from the Nowcasting SAF)

First, the term “rather simple” refers to the fact that our cloud mask does not have complex dependency to ancillary data and does not require dynamic threshold to be computed online using radiative transfer code as some more “evolved” cloud mask scheme sometimes do. Yet, our cloud mask scheme rely on a variety of spectral threshold which combine quite effectively to produce a quantitative cloud / clear probability index that can easily used to select more or less confident clear pixels. It should be noted that our cloud mask, although simple, has proved to perform quite well and has been used with success for various studies (see for instance Roebeling, R. A., H. M. Deneke, A. J. Feijt, 2008: Validation of Cloud Liquid Water Path Retrievals from SEVIRI Using One Year of CloudNET Observations. *J. Appl. Meteor. Climatol.*, **47**, 206–222.)

We used our own cloud mask primarily because we required a cloud masking scheme that we could easily modify to adjust detection level in order to keep all clear sky pixels at the expense of some cloud contamination. Using the more evolved Nowcasting SAF cloud mask for example does not allow for such fine tuning. Again, one need to bear in mind that “cloud masking” can be implemented quite differently depending on target application. Here, because we are looking at aerosols, including extreme events, we choose to allow for some potential cloud contamination which is later removed through temporal analysis, spatial homogeneity consideration and identified in a quality assurance mask.

Another secondary advantage is that our cloud mask scheme does not rely on any ancillary data which allow for a completely standalone implementation of our aerosol product relying solely on SEVIRI Level 1 data.

We have now clarify this in the revised manuscript.

English : A thorough correction of the English language seems in order.

We have tried to correct as much as possible the language but as non-native speaker we probably have inherent limitations which we hope can be somehow attenuated by the editorial production office. If necessary we could investigate for external support from professional writers.

Conclusion : I would like to see the following modifications before publishing

- ***Better explanation of the algorithm used (or a better reference)***

This has been done

- ***Correction of the English language.***

This has been tried to our best

Nice to have:

- ***Rerunning the algorithm with a better cloud mask***

As explained above regarding our choice of a cloud mask, we do not feel this would necessarily improve the overall final quality assessed product

- ***Increase of the temporal and spatial sampling of the validation data.***

Idem, see detailed response hereabove regarding the validation dataset selected