Response to the Reviewer comments. Original comments are in bold italics, our response is in regular font.

We greatly appreciate Reviewer's positive effort in overall improvement of the manuscript.

Specific Suggestion

In addition, I'd like to make a remark on the name "Capo Verde". You are right that this is indeed how AERONET spells the station name. Nevertheless, the name is not correct. It should be either "Cape Verde" (English) or "Cabo Verde" (Portuguese). I suggest to use the correct name of the country in the text. When referring to the AERONET station, you could use "Capo Verde" in parentheses

We corrected the manuscript and changed all references of Capo Verde to Cape Verde as per reviewer suggestion. Only in Table 2, where AERONET center names are listed, we have used "Capo Verde".

Specific Comments

The authors have appropriately addressed most of the discussion comments, and this revised version is a significant improvement, in particular with the new Figures 5 and 8 (per-season Taylor diagrams and station time-series plots) now allowing the seasonal effects described in the text to be seen more clearly.

However, I do have a few outstanding comments that should be addressed before final publication in ACP:

Regarding reviewer 1's comment on Section 5 and the description of R=0.28 as moderate, the revision doesn't really address the main points of either statistical significance (is this a dataset where R=0.28 could occur by chance alone?) or fraction of variance explained. Similarly, at page 11, line 33, r=0.375 is now described as "correlates well". These both seem like low r values compared to many of those in Tables 1 and 2, so the criteria for what should be considered a good correlation need to be clearer.

We determined the statistical significance of correlation between model and AEORNET observation in these two instances and found correlations are not significant at 95% confidence intervals.

Revised manuscript: Page 10, line 16-17, we rephrased the paragraph as “Sea-salt aerosol is dominant over remote Amsterdam Island in the southern Indian Ocean and model correlation is low (R=0.28) at 95% confidence intervals but associated with low RMSE”.

Page 12, line 32-34, we rephrased the sentence as “At Cape Verde, which is located just off the coast of Africa, NGACv2 correlation is low (R=0.375) at 95% confidence interval with AERONET observations, and also overestimates the intensity (nearly 2 times) during the event (Figure 12b)”.

Reviewer 1's comment about including the 2015 Indonesian fire event in the case studies, given that it's referred to in the conclusions, doesn't seem to have been acted upon. The manuscript would certainly be improved by including this, along with the explanation given in the author's response that the underestimation results from the emission dataset.

We have added a new figure (Figure 13) and a description about Indonesia forest fire in the manuscript.

Revised manuscript : Page 13, line 3-14 we have added “The 2015 fire season in Indonesia started in July and lasted through October with haze extended through Malaysia, Singapore, and Thailand and exposed millions of people to hazardously poor air quality (Field et al. 2016). Figure 13 shows total AOT from NGACv2, ICAP-MME and MERRA2 forecasts compared against EPS-VIIRS observation on a single day in September, 2015 over south-east Asia. 6-hourly model forecasts are averaged to get daily AOT for the models. NGACv2 underestimates total AOT which is caused by low smoke emission (both OC and BC) data used by the model for this fire event. Wei et al (2017) analyzed both forecast and analysis of MERRA2 aerosol fields and compared that against NGACv2. That study also compared aerosol analysis increments (defined as difference between analysis and model first guess) of all four cycles of MERRA2 and found large AOT analysis increment (0.6-0.8) in 06z DA cycle which contributed to higher AOT in MERRA2. Thus, the underestimation of Indonesian fire by NGACv2 can be attributed to both

near-real time emissions and absence of DA. Lynch et al (2016) study showed that AOT DA is as equally important as tuning process of the sources and sinks of aerosols."

We added Figure 13 in Page 35 of the manuscript. Also, we have added new references in the reference list.

At page 8, lines 8–9, it would be good to mention the good agreement with the ICAP-MME as supporting the theory that the significant underestimation for this case is a generic feature of coarse-resolution models, as suggested in the response to reviewer 2's comment. "Some" here should still be replaced with "many" or similar. Against AERONET (rather than ICAP-MME) it is the majority of data points in Figure 10 that are too low.

We corrected the text and replaced "some" with "majority" in that sentence.

And a couple of minor technical corrections:

Page 5, lines 1–2: although the acronym "MACC" has been updated to "CAMS" as per reviewer 2's comment, the full version has not. It should be "European Centre for Medium-Range Weather Forecasts / Copernicus Atmosphere Monitoring Service".

Correction made at the manuscript.

Revised manuscript : Page 5, line 1-2 corrected to "the European Centre Medium Range Weather Forecasts Copernicus Atmosphere Monitoring Service (ECMWF-CAMS)".

Page 5, line 18: the addition contains a typo (AEORNET should be AERONET).

We have corrected this particular spelling in the text, figure captions.