

Response to Anonymous Referee #1

The authors would like to thank Anonymous Referee #1 for his/her comments. Below, please find attached our response to each one of the referee's minor comments:

1. Line 1, Page 2: AERONET provide the full name.

We have added the AERONET full name in the revised version of the manuscript.

2. Line 3, Page 3: “Lelieveld et al., 2002, Giorgi, 2006” Should be “Lelieveld et al., 2002; Giorgi, 2006).”

This has been corrected in the revised version of the manuscript.

3. Line 7, Page 3: Please add some references for the sentence "The Mediterranean is also recognized as a crossroads between three continents where aerosols of various types accumulate”.

The classic paper from Lelieveld et al. (2002) that inserted the term "crossroads" for the Mediterranean Basin has been added.

4. Line 1, Page 4: The references format should be unified, for example: “Gkikas et al., 2013; 2014;” should be “Gkikas et al., 2013, 2014”., etc. Please revise all similar reference formats through the full text.

We have corrected this wherever it appeared in the manuscript.

5. Line 7, Page 7: “AE440-870”should be “AE₄₄₀₋₈₇₀”.

This has been corrected in the revised version of the manuscript.

6. Line 11, Page 8: “resolution of 1° x 1.25° “: Please add the note which is latitude? Which is longitude?

We write it like this "1o (latitude) x 1.25o (longitude) " in the revised version of the manuscript.

7. Line 32, Page 8: What is the resolution of wind speed data at 10 m above surface from ERA-Interim reanalysis used in your paper?

We thank the reviewer for giving use the opportunity to clarify this. We added the following in the revised version of the manuscript "...the data can be acquired at various resolutions (in this work 1ox1o) through ECMWF's website..."

8. Why have the years after 2012 been excluded?

We refer in the revised manuscript that the years after 2012 have been excluded as the MACC reanalysis data are only available for the period 2003-2012.

9. AERONET AOD₅₅₀ is how calculated?

We had already written about this in the paper "... Here, we use quadratic fits on a log-log scale to interpolate the AERONET data (AODs at 440, 500, 675 and 870 nm) to the MODIS band-effective wavelength of 550 nm (Eck et al., 1999; Levy et al., 2010)..."

However, we also added the following phrase in order to make it more clear "...So, we can directly compare the MODIS AOD₅₅₀ retrievals against AERONET observations..."

10. Line 12-13, Page 21: Please add some references for the sentence "Over the ocean, a profound maximum is observed in spring which is due to the well documented transport of significant amounts of dust from the Sahara Desert extending across the North African coast and the ocean."

As this spring transport is found in numerous papers about the area we added the following in the sentence "... (see Barnaba and Gobbi., 2004 and the list of references given in the introduction)..."

11. Line 3, Page 25: "from 49 % in SON to 50 %" should be "from 49 % in SON to 55 %".

This has been corrected in the revised version of the manuscript.

12. Figure 6d: AOD₅₅₀ at NAL region in spring is bigger than it in summer. Why?

This is mostly due to the significant amount of dust produced and transported in this region during spring. This can also be seen in Fig. 11 where we see the significantly higher amounts of dust over the region in spring compared to summer.

13. The conclusion is a very long summary, whether can be shorten appropriately?

We agree with the reviewer that the conclusions section is pretty long. So we decided to rename this section to Summary and conclusions. As this is a long paper and it is very common among scientists to focus on the abstract and the conclusions we prefer to keep the Summary and conclusions section as informative as possible (numbers, conclusions, methodology, future use of the dataset, etc.).

14. Whether to consider joining the back trajectory model to track the source of dust?

We thank the reviewer for his/her comment. We have already plans to extend the methodology as discussed in the Conclusions using more recent datasets that will allow the extension of the timeseries and we also are working on possible improvements of the methodology. Indeed the use of trajectory models could be useful especially over the sea as over land the method relies on data from models and the trajectories are not expected to return significantly different results. One of our future goals is to separate cases that dust is transported from Sahara from case that dust comes from Middle East and trajectory analysis will play a critical role.