

We thank Reviewer 3 for their comments on our manuscript. Below we have reproduced their comments in *italic*, and our response in regular type.

The authors analyze in their paper AERONET data from stations influenced from smoke aerosols. Their main objective is to provide typical microphysical and optical properties of smoke aerosols, that correspond either to fresh or aged (transported over the oceans) smoke, in order to provide a set of microphysical and optical properties for use in satellite AOD retrieval algorithms. The paper is well written and structured, the quality of the data used is very well documented and in general the paper should be considered for publication in ACP. There are few issues that should be considered before final acceptance listed below:

We are pleased that the reviewer found the paper well-written and well-structured, and recommends publication.

Page 25030: Line 1 to 10. The authors characterize certain cases as “transported smoke” cases but the methodology applied for this characterization is described very briefly. What satellite products do the authors use? Is HYSPLIT combined with some fire product? I believe the authors should elaborate here more, since this characterization should be well documented so that the resulting properties would be indeed representative for such cases.

The main satellite product used is true-colour imagery created from MODIS level 1 data, examined for the dates at which appropriate AERONET inversions were present. If a MODIS image suggested smoke, then HYSPLIT back-trajectories were run, and additionally journal articles (listed in Section 4, where available for an event) and news reports were cross-referenced for confirmation that this was indeed likely to be smoke. We chose to strike a balance here in the text between the number of cases described and the resulting length of the section; together with the listed references, Figures 7, 8, and 9 in the original manuscript were intended to illustrate this. This has been clarified in the revised manuscript. Note also that since the analysis for the preparation of the original version of this manuscript AERONET have released a ‘data synergy’ tool which is useful for this type of analysis: http://aeronet.gsfc.nasa.gov/cgi-bin/bamgomias_interactive

Page 25031: Lines 13-28: It is not clear from this paragraph how or if the authors exclude the impact of other aerosol types (e.g. urban) in characterizing the transported smoke, or they suggest also a third type “transported smoke under urban influence” to be applied near coastal densely populated areas?

The cases of transported smoke are likely to include some contribution of aerosol of non-smoke origin, e.g. urban/industrial sources or background continental aerosol. The main point of relevance for satellite/radiative calculations is whether the optical properties of the resulting smoke-dominated mixture remain similar to those from near-source smoke sites or not. So in this sense yes, we are suggesting that transported smoke mixed with other aerosol components (e.g. urban) can often be represented optically using the same properties as near-source smoke. In the revised manuscript, this section has been modified such that we hope it will be clearer—specifically, the discussion is now framed more explicitly around optical rather than microphysical properties, and Figures 10-13 from the original manuscript now also changed to focus on the optical properties.