We thank the reviewers #1 and #2 for their substantial comments. We believe their effort helped improving the manuscript a lot. We tried to follow the suggestions of the reviewers as good as possible. Our response to the comments are highlighted in green.

**Anonymous ref. #1**

General comment: The manuscript presents an experimental set up designed to retrieve atmospheric aerosol extinction along a horizontal path. The system is developed to approach the study of the hygroscopic growth effects on the aerosol extinction coefficient.

In this manuscript the main principles of the Spectral Aerosol Extinction Monitoring System, SÆMS, are presented. After a detailed description of the system the authors describe its performance and the evaluation tests against different methodologies to retrieve the extinction coefficient. The manuscript is worthy to be published in AMT after minor revisions.

Detailed comments:

In the abstract the authors must include some indications of the quantitative analyses included in the study. Some numerical results describing the main outcome of their analyses will improve the impact of the abstract.

We added the major quantitative results in our abstract.

In page 8649. The statement in lines 11-13 must include an explicit comment on the "local emission effects" as a factor to be considered in interpretation of the atmospheric aerosol extinction with Spectral Aerosol Extinction Monitoring System.

The reviewer is completely right. Such a statement is now included.

In page 8657. Line 27 the authors describe erroneously AOT as the aerosol optical depth. This is not coherent with the terminology used in the rest of the manuscript. They must revise the coherency of the terminology used.

We have changed the terminology and made it consistent.

In Page 8659, line 11. The reference (Ansmann, 2006) is missing in the reference list.

The reference list is completed now.

Figure 5. The aerosol property included as standard output in AERONET is the aerosol optical depth, AOD, or aerosol vertical optical thickness. The AOT, aerosol vertical thickness depends on the measurement path of the CIMEL CE318

radiometer, while the aerosol optical depth, AOD, evaluates the aerosol attenuation along a fixed path in the vertical direction. This must be revised in Figure 5 and along the text. Figure 9. The figure caption must be corrected considering the previous comment on AOT and AOD.

Thank you for the clarification. We have standardized the terminology.

The procedure applied to derive the extinction value derived from AERONET must be described in a more detailed way.

We have included the description of how we transfered AOD to extinction values in more detail.

Fig 10. This figure will require an indication of the uncertainty of the volume size distributions included. In the case of AERONET retrieval this is not a product provided in the retrieval algorithm, but at least the paper describing the methodology gives some indications about the range of uncertainties for different particle diameter. This "error bars" information would improve the discussion on differences and similarities included in the manuscript.

We have added the information about the uncertainties in the derived volume size distributions for the AERONET retrieval (as provided in the AERONET web page) and the SÆMS inversion algorithm in Fig. 10.

Furthermore, the authors must explain how they derive the volume size distribution from AERONET. The standard AERONET product correspond to the columnar aerosol size distribution, effective size distribution integrated in the vertical column, while the size distribution measured at the surface level or that derived from the SÆMS correspond to a given atmospheric level. So these three functions are not directly comparable and they do not have the same units.

The reviewer is right. The conversion of the columnar size distribution to the volume size distribution was missing. We have added the sentence:

*Under the rough assumption of a homogeneous aerosol layer of 3 km height the columnar size distribution was converted into volume size distribution.*

Figure 11. The authors must revise the way they express the mean and the associated standard deviation. The number of decimal figures for the standard deviation must be reduced. So the following combinations are the appropriate ones: 0.16+-0.08, 0.13+-0.12 and 0.05+-0.06.

You are perfectly right, we have changed our expression.

Figure 12. Although the number of decimal figures used for the mean and standard deviation is coherent, the use of a reduced number of decimal figures for the standard deviation would be more appropriate, being the right pairs: 0.9+-0.7 and 1.6+.0.4.

We have followed your suggestion and have changed our expression.